

THE MEDICAL JOURNAL OF AUSTRALIA

VOL. II.—19TH YEAR.

SYDNEY, SATURDAY, DECEMBER 17, 1932.

No. 25.

Table of Contents

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ORIGINAL ARTICLES—	PAGE.	ABSTRACTS FROM CURRENT MEDICAL LITERATURE—	PAGE.
"Results of Operative Treatment of Chronic Glaucoma", by EDWARD L. GAULT, M.A., M.B., M.S.	735	Ophthalmology	756
"Abortion", by RALPH WORRALL, M.D., M.Ch., F.R.A.C.S., F.A.C.S.	739	Oto-Rhino-Laryngology	756
"Pathological Fractures", by P. L. HIPSLEY, M.D., F.R.A.C.S.	743	BRITISH MEDICAL ASSOCIATION NEWS—	
"Blood Transfusion: An Apparatus for Transfusion of Citrated Blood", by E. H. STOKES, M.B., Ch.M.	746	Scientific	758
"Eucalyptol or Cineole", by JOHN MACPHERSON, M.A., B.Sc., M.B., Ch.M.	750	Scholarships and Grants in Aid of Scientific Research	762
REPORTS OF CASES—		Nominations and Elections	762
"Atresia of the Cervix Uteri with Hematometra Following Curettage of the Uterus", by RALPH WORRALL, M.D., M.Ch., F.R.A.C.S., Hon. F.A.C.S.	751	PUBLIC HEALTH—	
REVIEWS—		Unemployed Food Relief Ration Scales	762
Irrigation of the Colon	752	OBITUARY—	
The Value of Laboratory Methods	752	Edgar Kenneth Rodda	763
LEADING ARTICLES—		Thomas Storie Dixon	763
Cancer of the Stomach and Peptic Ulcer	753	CORRESPONDENCE—	
CURRENT COMMENT—		Physiological Standards in Australia and New Zealand	763
Addison's Disease	754	Facial Paralysis Following Tick-Bite	764
Smallpox	755	BOOKS RECEIVED	764
		MEDICAL APPOINTMENTS	764
		MEDICAL APPOINTMENTS VACANT, ETC.	764
		MEDICAL APPOINTMENTS: IMPORTANT NOTICE	764
		EDITORIAL NOTICES	764

RESULTS OF OPERATIVE TREATMENT OF CHRONIC GLAUCOMA.¹

By EDWARD L. GAULT, M.A., M.B., M.S. (Melbourne),
Honorary Consulting Ophthalmic Surgeon,
The Alfred Hospital, Melbourne.

THE operative treatment of glaucoma may be said to have begun when Graefe, in June, 1856, made the discovery that iridectomy was followed by lowering of the raised intraocular pressure, which is the most striking, constant and important feature of the disease.

In glaucoma the importance of raised intraocular pressure as the principal if not the only cause of the injury to the nervous elements of the eye and the rapid or slow progressive failure of sight is now generally admitted. It is true that a disease has been postulated characterized by progressive failure of sight, contraction of the field of vision and excavation of the optic nerve without rise of tension at any time. This has been called *glaucoma simplex*, and corresponds to a type described by Graefe and called by him amaurosis with excavation of the

optic nerve. I have always doubted the existence of this type and believe that, apart from cases of congenital coloboma or of simple atrophy of the optic nerve accompanying such diseases as tabes and disseminated sclerosis, cupping of the optic disk and its attendant loss of vision are always produced by raised intraocular pressure.

If this be granted, the relief of increased intraocular pressure is the major therapeutic problem before the oculist in glaucoma.

In spite of the wide range of research into the mechanisms which regulate intraocular pressure, the exact nature of the mechanisms involved is still obscure and the respective rôles of increased formation or of restricted absorption of the intraocular fluid in disturbing the balance cannot yet be finally assigned.

Moreover, our ability to control by medicaments a hypothetical excessive formation of aqueous fluid is as yet so limited that it cannot be treated seriously.

We are still obliged to fall back upon measures directed toward providing relief of tension by opening up new channels of escape for the intraocular fluids.

¹ Read at the annual meeting of the Royal Australasian College of Surgeons, February, 1932.

The benefit derived from iridectomy was ascribed by Graefe to lessened secretion. He believed that the iris participated in the formation of the aqueous fluid and that as large a piece of iris as possible should be removed.

It was de Wecker who first taught that iridectomy produced its favourable result by the formation of a filtering scar and who introduced the operation of sclerotomy as a substitute for iridectomy. About the same time Bader at Moorfields drew attention to the beneficial results which followed the formation of a cystoid cicatrix when the iris remained entangled in the wound, and recommended the deliberate incarceration of a portion of the iris in the wound in order to secure such a cicatrix. In this he anticipated the modern operation of iridencleisis advocated by Holth, of Christiania. It is interesting to note in the history of the development of the theory and practice of the operative treatment of glaucoma, that as far back as 1878 Argyll Robertson had sought to create a permanent fistula by trephining the sclerotic two lines or more behind the sclero-corneal junction with a modification of Bowman's corneal trephine, which is not unlike the trephine introduced by Elliot. He reported favourable results.

In these earlier operations no attempt was made to prevent communication between the conjunctival sac and the anterior chamber. The frequent occurrence of infection of the eye following such measures brought them into disrepute and led most oculists to adhere to the older operation of iridectomy, until Lagrange taught us how to produce a fistulous opening between the anterior chamber and the sub-mucous tissues of the conjunctiva.

Till that epoch was reached, attention was concentrated on opening up the ciliary angle. The teaching of Priestley Smith had emphasized the importance of the ciliary angle as the channel of escape for the aqueous whenever the intraocular pressure was raised. The researches of Treacher Collins had shown that in cases of uncured glaucoma the root of the iris was usually adherent to the back of the cornea, completely closed the angle and prevented escape of aqueous through the interstices of the pectinate or cribriform ligament into Schlemm's canal. He therefore advised, as his predecessors had done, early operation, a section made as peripheral as possible, and a technique in the iridectomy by which the iris was cut radially at one angle of the wound, then torn across and cut off at the other end. In this way Collins believed it was possible in many cases to remove the iris right up to its insertion into the corneo-scleral junction and so to open up the filtering area.

In spite of all these advances in knowledge and practice, the percentage of recoveries remained low and the outlook for the sufferer from glaucoma continued gloomy, though not nearly so gloomy as in the pre-iridectomy days.

It was in 1906 that Lagrange published his account of a method of creating a fistulous opening between the anterior chamber and the subcon-

junctival tissues of the limbus by his sclerectomy combined with iridectomy. I remember reading his first papers and hailing the procedure as the long-sought solution of the glaucoma problem. The wonder was that no one had thought before of the large conjunctival flap by means of which the various forms of sclerectomy or iridencleisis which had been tried or have been introduced subsequently, may be performed with safety and success.

It is unnecessary to describe these well known operations. They have come into general use and have almost everywhere taken the place of iridectomy in all cases of glaucoma, except in the acute form.

Today three operations hold the field—Lagrange's sclerecto-iridectomy, Elliot's sclero-corneal trephine operation, and Holth's iridencleisis. All of these are effective in the production of the desired fistula, and have given results which appear to be equally good. For myself, I began with Lagrange's operation, but since I learned the technique of Elliot's operation, I have adopted it in preference to that of Lagrange as being in my opinion a simpler and safer operation and as more likely to lead to a permanent fistula. Moreover, there is less astigmatism produced than by Lagrange's operation.

This brief historical retrospect warrants the following statements:

1. Glaucoma is a disease of the eye, the essential feature of which is an increase of the intraocular pressure.

2. This raised intraocular pressure may be relieved and reduced to normal or subnormal by the establishment of a new channel of drainage between the anterior chamber and the subconjunctival tissues.

It remains to consider whether the newer operations can arrest the progressive failure of vision, or at least can greatly delay the ultimate fatal issue in total loss of sight. On the one hand, statistics are published from time to time which prove that sight may be preserved for many years subsequent to operation. On the other hand, observers, like Holth in a recent paper, while claiming for operation a marked delay in the onset of blindness, nevertheless regard blindness as the inevitable termination of all cases of glaucoma.

Estimation of the Beneficial Effect of Fistula Formation in the Eye.

When an attempt is made to estimate the beneficial effect of operation, the question presents itself: What is the course of untreated cases of chronic glaucoma? Definite information on this point is hard to find. Elliot in his book on glaucoma writes:

It is true that the course of some of these cases is extremely slow and that most of them would not lead to blindness for a long time, even if unchecked.

Priestley Smith in his classical essay on glaucoma writes:

Sir William Bowman was consulted by a lady in 1865. He noted—and he has kindly placed the notes at my disposal—increased tension and commencing excavation, diagnosed glaucoma, and spoke of iridectomy. The opera-

tion was not performed. Twenty years later this lady came under my own care with deeply excavated discs, contracted fields and impaired vision. I saw her many times; sometimes the tension was quite normal, sometimes it was decidedly increased. Vision was still useful, but failing rather rapidly. Iridectomy was performed with good results.

I should regard this as a very exceptional case, and should be inclined to fix a period of not more than five years between the first diagnosis of glaucoma and the occurrence of blindness in the great majority of cases. In support of this I quote the following cases observed:

R.B.—Sight failed gradually during nine months. Vision is $\frac{2}{60}$ to $\frac{9}{60}$.

K.—Sight of the right eye was good till eleven months ago; since then gradual failure has occurred. Vision is $\frac{6}{24}$ with much contracted field.

B.—The left eye failed and became blind in a year.

N.—Sight of both eyes failed gradually, twelve months. Vision is $\frac{9}{60}$.

A.H.E.—Vision failed from $\frac{9}{60}$ to $\frac{3}{60}$. The patient developed deep excavation and marked nasal step within twenty-two months.

J.—Sight failed gradually in two years. Vision is $\frac{9}{30}$ to $\frac{3}{24}$.

R.—Sight of right eye failed in three years from $\frac{9}{60}$ to $\frac{9}{24}$ with marked nasal step.

E.—Sight of left eye failed in two years from $\frac{9}{60}$ to $\frac{3}{60}$ with marked nasal step.

W.J.T.—In three years developed deep excavation and nasal steps, but vision remained at $\frac{9}{60}$.

C.—Sight failed in four years to vision in right and left eyes $\frac{3}{60}$.

M.—Sight failed in four years from $\frac{9}{60}$ to $\frac{2}{60}$.

R.—Sight of left eye failed in four years from normal to ability to count fingers.

A.B.C.—Sight failed in right eye in five years from $\frac{9}{60}$ to nil.

If these figures are typical (and I think they are) of the progress of untreated cases, we may fairly

attribute to operation the result when the progress of the disease is greatly delayed beyond a period of five years.

A study of the tables discloses the fact that in eight cases before operation the nasal field of vision was found to be contracted almost to the fixation point, yet in none of them was there that rapid loss of central vision which is often spoken of as likely to be precipitated by operation. I regard this fear as a bogey and should never hesitate to operate merely because the field of vision had contracted to near the fixation point. I have no record of late infection, which is sometimes urged as a danger specially besetting Elliot's operation.

Two cases ended unfavourably, number 6 from an infective keratitis, which left marked corneal opacity, and number 11 from chronic iritis complicated by cataract and going on to excision.

As shown in Table I, three patients showed no further loss of vision over a period of four years, and tension was maintained within normal limits. There was, however, evidence in two of them of further contraction of the field of vision. Three patients observed for three to three and a half years had normal or subnormal tension; no further loss of vision and no further contraction of the field of vision occurred. In three patients observed over two years vision remained stationary. In two patients observed over two years vision remained stationary. The vision of one observed for one year improved from $\frac{2}{60}$ to $\frac{6}{24}$.

In the series of eleven patients observed for one year or less, five did badly. One, number 2, lost his vision by detachment of the retina. The vision of another declined from $\frac{6}{30}$ to $\frac{3}{60}$, though the tension was reduced to normal; as this patient was

TABLE I.
Patients Observed over Period up to Five Years.

Number.	Initials.	Age.	Sex.	Operation.	Time.	Change of Vision. + or -	Tension.	Field of Vision.	Notes.
1	J.W.S.	68	M.	Right Elliot.	1 month.	$+\frac{9}{12}$ to $\frac{9}{24}$.			
2	N.McL.	31	M.	Elliot.	Few weeks.	$-\frac{3}{60}$ to blindness.	35 to 30.	Lost.	Detached retina.
3	J.G.B.	51	M.	Right Elliot.	2 months.	$+\frac{9}{60}$ to $\frac{9}{12}$.			
4	W.B.J.	67	F.	Left Elliot following iridectomy two years before.	2 weeks.	$-\frac{9}{36}$ to $\frac{3}{60}$.	18 mm.		Field of vision to fixation point before operation.
	G.E.P.	72	M.	Left Elliot.	3 months.	$-\frac{9}{18}$ to hand movements.	N.		Posterior synechia. (?) Detachment.
6	S.H.	69	F.	Left Elliot. Flap perforated.	3 months.	$-\frac{9}{18}$ to $\frac{9}{60}$.	± 1		Keratitis leaving marked corneal opacity.
7	A.J.S.	69	F.	Right Elliot.	4 months.	$+\frac{9}{12}$ to $\frac{9}{24}$.	12 mm.		
8	J.G.	67	F.	Right Elliot.	11 months.	$+\frac{9}{24}$ to $\frac{9}{60}$.	12 mm.		Good drainage.
9	J.W.	66	M.	Left Elliot.	1 year.	$-\frac{9}{60}$ to $\frac{9}{60}$.	N.		Slight drainage.
10	M.H.	70	F.	Right Iridectomy.	1 year.	$\frac{9}{60}$ to $\frac{9}{60}$.	25 mm.	Nasal step. No further failure.	
11	A.W.	59	F.	Left Lagrange.	5 months.	$-\frac{9}{18}$ to nil.	—		Iritis—cataract ex- cision. (?) Infection.
12	H.M.	63	M.	Left Lagrange. Ex- traction of cataract later.	1 year.	$+\frac{3}{60}$ to $\frac{9}{24}$.	12 mm.		
13	J.W.	66	M.	Right Lagrange.	2 years.	$\frac{9}{60}$ to $\frac{9}{60}$.	30 mm.		
14	M.K.	67	F.	Right Elliot.	2 years.	$\frac{9}{60}$ to $\frac{9}{60}$.	10 mm.		
15	W.S.	17	M.	Right Elliot.	3 years.	$\frac{9}{60}$ to $\frac{9}{60}$.	22 mm.	No further contrac- tion.	
16	J.G.B.	51	M.	Left Elliot.	3½ years.	$\frac{9}{60}$ to $\frac{9}{60}$.	Below N.	No further contrac- tion.	
17	W.T.	50	M.	Left Elliot.	3½ years.	$\frac{9}{60}$ to $\frac{9}{60}$.	15 mm.	Upper field only.	Disc pale, but no cupping.
18	A.J.G.	69	F.	Right Elliot.	4 years.	$\frac{9}{12}$ to $\frac{9}{12}$.	22 mm.	Further contraction on temporal side of 20°.	
19	J.G.B.	51	M.	Left Elliot.	4 years.	+Hand move- ments to $\frac{9}{60}$.	18 mm.		
20	C.D.	56	F.	Right Elliot.	4 years.	$+\frac{9}{18}$ to $\frac{9}{60}$.	18 mm.	Field of vision still contracting.	

under observation for only two weeks, it is possible that improvement may have been manifested later. The vision of a third was reduced from $\frac{6}{18}$ to perception of hand movements as a result of iritis and possibly detachment of the retina. A fourth had vision reduced from $\frac{6}{18}$ to $\frac{3}{60}$ as a result of infective keratitis, and remained with tension +1 at the end of three months. The fifth had a decline of vision from $\frac{6}{5}$ to $\frac{6}{60}$ within a year, apparently as a result of failure to establish drainage.

The table on the whole shows arrest of visual failure in 80% of the cases. No further contraction of field of vision was noticed in three cases, further contraction in two cases.

Turning next to Table II, of patients observed over a period of five to ten years, there is evidence of almost stationary vision in the whole of the twelve cases. No further contraction of the field of vision was noted in four instances, further contraction in three.

TABLE II.
Patients Observed over Period Five to Ten Years.

Number.	Initials.	Age.	Sex.	Operation.	Time.	Change of Vision. + or -	Tension.	Field of Vision.	Notes.
1	W.A.E.	63	M.	Left Elliot.	5 years.	$+\frac{3}{60}$ to $\frac{2}{60}$.	22 mm.	Slight further contraction.	
2	E.F.	52	F.	Right Elliot.	5 years.	$+\frac{2}{24}$ to $\frac{1}{12}$.	Low.	Continued contraction.	At operation almost at fixation point.
3	E.F.	52	F.	Right Elliot.	5 years.	$+\frac{1}{12}$ to $\frac{2}{60}$.	20 mm.		
4	W.A.E.	63	M.	Left Elliot.	5 years.	$\frac{2}{12}$ to $\frac{2}{60}$.	22 mm.		
5	A.B.C.	48	F.	None.	6 years.	Blind.	High.		Hæmorrhage.
6	W.S.	17	M.	Right Elliot.	6 years.	Poor sight, but no worse.	55 mm.	No further contraction.	
7	J.S.P.	61	M.	Left Elliot.	7 years.	Writes in clear hand that left eye seems to be dimming a little, but can read "Argus," without glasses, close to face.			
8	W.L.	70	M.	Elliot.	7 years.	$\frac{1}{60}$ to $\frac{1}{60}$.	21 mm.	No increase of marked contraction.	
9	H.P.	64	M.	Right Elliot.	7½ years.	$\frac{1}{24}$ to $\frac{1}{12}$.	8 mm.	No further contraction on temporal side.	At operation complete inferior nasal defect reaching fixation point.
10	H.J.	65	F.	Right Elliot.	8 years.	$\frac{1}{6}$ to $\frac{1}{6}$.	23 mm.	No further contraction.	
11	H.J.	65	F.	Left Elliot.	8 years.	$\frac{1}{6}$ to $\frac{1}{12}$ (3 yrs.).	15 mm.		At operation upper field of vision almost gone.
12	W.J.P.	62	M.	Right Elliot.	9 years.	$\frac{1}{6}$ to $\frac{1}{6}$.	12 mm.	Continued contraction to quite small field of vision.	Before operation marked hour glass contraction of field.

TABLE III.
Patients Observed over Period of Ten Years and Upward.

Number.	Initials.	Age.	Sex.	Operation.	Time.	Change of Vision. + or -	Tension.	Field of Vision.	Notes.
1	W.J.D.	55	M.	Right Elliot.	9 years.	$\frac{1}{6}$ to $\frac{1}{6}$.	12 mm.	Continued contraction of field of vision.	
2	C.T.	66	F.	Right Elliot.	10 years.	$\frac{1}{36}$ to $\frac{1}{36}$.	15 mm.	No further contraction.	Became highly myopic.
3	A.T.	63	F.	Right iridectomy.	10 years.	$\frac{1}{6}$ to $\frac{1}{12}$ (5 yrs.) to $\frac{1}{24}$ (10 yrs.).	25 mm.	Deep nasal steps upwards, otherwise fairly good.	
4	A.J.R.	67	F.	Right Lagrange.	11 years.	$\frac{1}{36}$ to $\frac{1}{24}$ (5 yrs.) to fingers (11 yrs.).			
5	J.S.	49	M.	Right iridectomy.	12 years.	To $\frac{1}{12}$.		Deep re-entrant angle on nasal side nearly to fixation point.	
6	W.J.P.	55	M.	Left Lagrange.	12 years.	$\frac{1}{6}$ to $\frac{1}{12}$.	15 mm.	Much contracted.	At operation field of vision contracted nearly to fixation point.
7	H.M.T.	57	M.	Left Lagrange.	12 years.	Continual occupation as estate agent till death.			
8	S.A.	58	F.	Right Lagrange.	13 years.	$\frac{1}{6}$ to $\frac{1}{12}$.	20 mm.	Further contraction.	At operation field of vision nearly at fixation point.
9	A.F.S.	30	M.	Left Elliot.	13 years.	To $\frac{1}{6}$.	25 mm.	No change in small lower field of vision.	
10	E.G.F.	64	M.	Wide iridectomy.	14 years.	$\frac{1}{36}$ to $\frac{1}{36}$.	22 mm.	Good.	
11	R.McF.	38	M.	Left Elliot.	15 years.	$\frac{1}{12}$ to $\frac{1}{36}$.	23 mm.	No change, field of vision nearly normal.	
12	W.J.P.	55	M.	Left Lagrange.	16 years.	$\frac{1}{6}$ to $\frac{1}{36}$.	17 mm.	Further contraction, but macula spared.	
13	E.R.	47	M.	Right iridectomy.	16 years.	$+\frac{1}{36}$ to $\frac{1}{12}$ (5 yrs.) to $\frac{1}{36}$ (16 yrs.).	15 mm.	Small lower field.	Field of vision at operation. Hour glass nearly to fixation.
14	W.J.P.	55	M.	Left Lagrange.	16 years.	$-\frac{1}{6}$ to $\frac{1}{36}$.	17 mm.	Continued contraction.	
15	R.McF.	38	M.	Right Lagrange.	19 years.	$\frac{1}{6}$ to $\frac{1}{6}$.	18 mm.	Lower half decreasing.	

Table III shows no further loss of vision in five cases, slight loss of vision in four, marked loss of vision in four, while in two cases vision failed almost completely in the course of ten and eleven years respectively. Continued contraction of the field of vision was noted in eight cases and no further contraction in four.

The evidence is conclusive that vision may be preserved without appreciable change for the worse in a large number of cases over periods extending to as many as nineteen years, and that in many tension is kept within normal limits and the field of vision may remain unchanged.

Only two of fifteen patients observed over a long period of years reached a stage of practical blindness.

These results are in agreement with the results published from time to time since the introduction of the operation of sclerectomy, and constitute a great advance upon those obtained formerly. They appear to me to emphasize the duty of urging operation upon any patient suffering from chronic glaucoma. I am not sure that this is recognized as widely as is desirable. It is still customary to spend some time in treating the patient with eserine or pilocarpine and to defer operation till this has proved ineffectual. Elliot, while advising operation, makes a reservation which I am not inclined to make. He writes:

The writer is convinced that, if taken in the mass, the best results will be found in the clinic of the surgeon who operates the moment he is satisfied in his own mind that glaucoma is present and progressive in spite of treatment.

May I ask if any of you have evidence of the satisfactory treatment of chronic glaucoma with pilocarpine over a long period? If that cannot be demonstrated, and if in the end operation is almost always required, I ask: "Why temporize?" The ultimate issue in blindness is certain unless operation is undertaken, and this disaster can be only a matter of a few months or a year or two at the outside. In view of this, why should valuable time be wasted in the employment of measures that do not promise lasting benefit? My own practice for years has been to advise operation in all cases of chronic glaucoma unless advanced age or serious illness is a complication, and thus to place the responsibility for refusal on the shoulders of the patient.

Summary.

I shall sum up my opinions in the following propositions:

1. There is no such disease as simple chronic glaucoma without increased intraocular pressure.
2. There is no risk of precipitating blindness if operation is undertaken in advanced cases with a field approaching closely the fixation point.
3. No lasting benefit can be expected from miotics and general treatment alone.
4. We may regard operation as curative, or at least we may claim that it offers a means of greatly delaying the progress of the disease in a large majority of cases and that it should be undertaken as soon as a diagnosis has been made.

ABORTION.¹

By RALPH WORRALL, M.D., M.Ch., F.R.A.C.S., F.A.C.S. (Hon.),
Consulting Gynaecologist to the Sydney Hospital.

THANK you for inviting me through your President, Dr. Throsby, to read this paper, and for coming in such large numbers to hear me.

I shall chiefly dwell on what my own experience has taught me.

Incidence.

It is said that 15,000 women die of criminal abortion each year in Germany.⁽¹⁾ In Russia where abortion is legal the mortality is said to be much less.

The Director-General of Public Health has written to me to say that 904 women were treated for abortion in the Coast Hospital in 1931, and that the numbers have increased at a startling rate from 10.7% of all female patients treated in 1928 to 14.5% in 1931. Of the 904 patients admitted, 901 were curetted. There were 29 deaths. Information as to the number of infected cases was not available, which is to be regretted.

The Government Statistician's returns show that in 1931 there were 53 deaths from abortion, and 45 from illegal operations. Considering that all these unfortunate women would be in the prime of life, the great importance of the subject must appeal to everyone capable of feelings of compassion and patriotism.

Ætiology.

There is strong evidence that the chief cause of abortion is wilful interference with Nature.

In a medico-legal suit against the Commonwealth Government I put forward the view that weakness of the gametes in either partner is sometimes a cause.

Two others I wish particularly to bring under your notice.

For instance, a married couple desire children; pregnancies occur, but each ends in abortion or premature birth. The husband dies, the wife marries again, and normal pregnancies follow. What happens is that the generative cells in the new husband are sufficiently vigorous to compensate for weak cells in the wife.

One of the chief points I wish to make is that retroversion of the gravid uterus is a common cause of abortion, and that if ante-natal treatment were extended backwards so as to embrace the whole of pregnancy and not merely its latter half, the frequency of abortion would be greatly lessened, while it would be more common for ectopic gestation to be discovered before rupture.

I urge that women be educated to consult their medical attendant directly a period has been missed, so that a thorough examination can be made, and the presence of any abnormality be discovered at a stage when its rectification can be most safely undertaken.

For instance, if retroversion be present, it can almost always at this early stage be easily restored bimanually. Later the knee chest position must be

¹ Read at a meeting of the Clinical Society of the Royal North Shore Hospital of Sydney on October 11, 1932.

resorted to. In using this procedure it must be remembered that the atmospheric pressure which is admitted to the vagina by hooking upwards the perineum cannot give the help sought unless the cervix be seized with a volsellum forceps and rolled backwards into the hollow of the sacrum; it is at the same time pulled downwards while two fingers of the left hand push upwards the retroverted uterus towards one or other sacro-iliac joint, thus avoiding the obstacle of the sacral promontory.

Having restored the uterus in this way, taking the greatest care to avoid undue force, it is wise to insert an Albert Smith pessary for three or four weeks, that is, until the uterus is too large to retrovert again.

Sometimes not abortion but a much graver condition results from retroversion of the gravid uterus. The pregnancy continues to develop until between the third and fourth month, when the pressure in the pelvis causes retention of urine and may cause sloughing of the vesical mucosa, pelvic adhesions *et cetera*. I have seen both these conditions.

The risk of sloughing of the mucosa is greatly increased if the distended bladder be rapidly emptied. An hour should be spent in drawing off thirty ounces of urine, and three hours in evacuating sixty ounces.

In one case of adhesions at three and a half months gestation I was forced to do abdominal section. I easily separated the adhesions, and gently lifted up the uterus. All went well, and the patient was in the highest spirits at the prospect of a baby. On the fourteenth day at 9 p.m. she said good night to her husband, the nurse thereupon came in and turned off the light; hearing a gurgle the nurse spoke, there being no reply, she turned on the light; the patient was dead, evidently from pulmonary embolism originating in thrombosis in the uterine veins.

Ante-natal care from the beginning of pregnancy would have prevented this tragedy.

There are of course many other causes of abortion, such as syphilis, Bright's disease and other constitutional diseases, focal infection, defective endocrines *et cetera*.

Therapeutic Abortion.

Therapeutic abortion is the term applied to the induction of abortion for some condition which menaces the patient's health or life, or the interests of the community.

There has recently been a debate at a combined meeting of the New South Wales Branch of the British Medical Association on this subject. Professor Dawson took the line that insanity, epilepsy and other hereditary diseases did not warrant the induction of abortion. Other speakers held similar views with regard to heart disease with failed compensation. I urged strongly that unfortunate patients affected in this way should never be allowed to become pregnant, and that if contraceptives had not been used or had failed, then induction of abortion should be practised.

Insanity and epilepsy are on the increase, and becoming a burden greater than the State can support. The asylums are overcrowded; some hundreds of insane are out on leave. Think of it, hundreds of sufferers from the most hereditary, the most incurable, and the most socially devastating of all diseases out on leave, and reproducing their like. No insane

person should be discharged until sterilization has been performed, because no insane person can ever be cured of the propensity to transmit the insane diathesis.

This is a wide subject, and I must not occupy too much time in its elaboration, but, holding the above views, I think it my duty to lay before you the methods which I consider best for induction of abortion at different stages of pregnancy.

(1) If the woman has passed her period by only a few days and the uterus is not materially enlarged, map out the uterus bimanually, cleanse and disinfect the os, pass the sound, seize a small piece of sterilized wool with a long sinus forceps, such as I show you, dip the wool into a solution of silver nitrate in *spiritus ætheris nitrosi* (sixteen grains to the ounce), rub this all over the endometrium; repeat this three times. This procedure will result in an abortion in almost every case, but may have to be repeated. The patient is able to go about, but if the red flow should continue more than a week, curettage is indicated.

(2) If the pregnancy be a little further advanced but not over six weeks, ether should be given, the cervix dilated with Hegar's dilators, and the uterine cavity emptied with the curette. Asepsis must be perfect.

Beyond this period emptying the uterus in one sitting is contraindicated. It is very dangerous, and has been responsible for most of the criminal trials of doctors and others in the State for murder or manslaughter in connexion with criminal abortion.

It is far wiser to make nature expel wholly or in part the uterine contents, after which the curette can be used.

This can be done by packing iodoform gauze into the uterus after a slight mechanical dilatation of the cervix. Pituitrin, 0.12 mil (two minims) intramuscularly injected every half hour for three or four doses, is often a help. If necessary, remove the gauze and repack the uterus in twenty-four hours.

Another method is to pass the sterile sound through the disinfected cervix, and turn it round until the amniotic sac has been ruptured. Labour will eventuate in a day or two. If one fails to rupture the sac with a sound, a small curette passed through a mechanically dilated cervix will effect the purpose.

It is good practice, after rupturing the sac, to pack the uterine cavity lightly with iodoform gauze, which helps to excite uterine action, and to dilate the cervix.

Personally I prefer vaginal hysterotomy for the induction of abortion after the eighth week, especially when speed is of importance. In the early part of pregnancy there are not the objections to this procedure which exist at full term. There is also less danger of hæmorrhage and septic infection than in the other methods.

A transverse incision is made along the cervico-vaginal junction, the line of cleavage between bladder and uterus is found and the bladder is dissected up with the scissors as far as seems necessary.

In a fairly advanced gestation, it will be advisable to make a small vertical incision through the vaginal mucosa from each end of the transverse incision, so

as to allow the bladder to be elevated sufficiently off the uterus, which is then incised exactly in the median line, from the anterior lip of the os, upwards until the uterine cavity can be rapidly emptied with ovum forceps, finger, gauze on holder and curette. Catgut sutures are then inserted to close the uterine and vaginal incisions.

The following case history exemplifies the foregoing, and conveys valuable lessons.

The late Dr. Rennie asked me to see Mrs. A., a nullipara of thirty, suffering from acute phthisis, so called galloping consumption, complicating pregnancy of three and a half months.

Her evening temperature varied from 39.4° to 40.5° C. (103° to 105° F.). Notwithstanding her desperate condition coitus with her husband had taken place, and had resulted in pregnancy. It was decided to induce abortion.

I started confidently by packing the cervix and lower uterine zone with iodoform gauze. As this failed to excite uterine pains at the end of twenty-four hours, I removed the gauze, broke up the amniotic sac and repacked the uterus; again there was no result beyond slight dilatation and softening of the long hard cervix. Thinking I could now dilate the os, I anesthetized the patient, and used a powerful Sims dilator.

Notwithstanding that I took plenty of time and used great care, I felt a tear in the region of the inner os. With much difficulty and while much hæmorrhage occurred I extracted the relatively large embryo and placenta, and packed the uterine cavity with gauze. The patient died in five or six hours of shock.

I feel confident a vaginal hysterotomy, of which I have had experience on two occasions since, would have emptied the uterus with infinitely less trouble and danger.

I gave a death certificate as "Acute phthisis. Induced abortion". The police called on me to ask if I had had a consultation before resorting to induction of abortion.

If one is to avoid trouble and loss of credit, one must fill in death and all other certificates in strict accordance with truth, one can then face a court or investigation with equanimity and confidence.

Treatment of Abortion.

For purposes of treatment abortion may be divided into threatened, inevitable, infected, incomplete. The rare but important missed abortion I do not propose to discuss, but ask you to bear in mind as a possibility.

Threatened Abortion. Threatened abortion should be treated by rest, morphine and atropine, and mild aperients.

Some authorities say that after spontaneous threatened abortion there may be defects in the full term child or complications at labour such as *placenta accreta*. I cannot recall such instances, but should like to hear the experiences of others.

Inevitable Abortion. For inevitable abortion I reiterate my firm conviction that there should be no active interference, except in very early stages of pregnancy; allow Nature to do its own work at least in part. When the cervix has dilated, and the ovum has been partially expelled, then curettage can be usefully employed.

If the hæmorrhage should be serious, or if the medical attendant might not be available in case of an urgent call, plugging must be practised, but it should be recognized that plugging favours sepsis,

and therefore should be resorted to only if really necessary.

The technique of plugging is important. The material should be gauze, ten to fifteen yards of two inch sterilized gauze squeezed out of 4% mercuriochrome, 0.5% lysol, or one in 5,000 biniodide of mercury solution. If one uses dry gauze, it becomes displaced by hæmorrhage and ceases to be a firm efficient pack.

Having cleansed the vulva and douched the vagina with one of the above solutions, place the patient in the lithotomy position, insert a vaginal retractor, and pack each fornix and finally the whole vagina with the moistened gauze. Press the gauze away from the neck of the bladder so that micturition shall not be interfered with. Remove the packing in twenty-four hours, and reinsert packing for another twenty-four hours if serious hæmorrhage continues, and if the cervix has not dilated sufficiently to allow of easy evacuation of the uterine contents. Pituitrin, 0.12 mil (two minims) intramuscularly injected every twenty minutes for three or four doses, will stimulate uterine action. Packing tends to abrade the vagina, and therefore should not be repeated more than once. The inevitable abortion which we are considering will very rarely need a second packing, and may not need any.

Infected Abortion. The treatment of infected abortion is the same as that just described, except that instrumental interference should be even more rigidly excluded, at all events until the ovum has been partly expelled and the cervix well dilated.

In Sydney it is not uncommon for serious infection to have been brought about, and the patient to be in a critical condition, without any dilatation of the cervix. The following is an example:

I was asked by a suburban practitioner to curette the uterus of a young girl who two days previously had been to a nurse to have an abortion procured; there had since been two rigors, the temperature had reached nearly 40° C. (104° F.), and the pulse rate 120. The girl was evidently dangerously ill. The uterus, extremely tender, was enlarged to the size of three months of utero-gestation, the cervix was undilated, and hæmorrhage was slight.

I advised quinine hydrochloride 0.6 gramme (ten grains) to be given in 300 cubic centimetres (ten ounces) of saline solution *per rectum* every four hours for four doses; strychnine and digitalone to be given hypodermically and general supporting measures, but no instrumental interference whatever. The uterus emptied itself in forty-eight hours, and the patient eventually made a good recovery.

I am convinced that dilation and evacuation of the uterine contents by the curette or manually would have extended the infection and resulted in death.

Incomplete Abortion. We now come to the variety of abortion for which medical aid is most frequently sought. In incomplete abortion infection may or may not be present, but in my opinion the treatment in either case is the same, and here I find myself at variance with the majority of writers in the United Kingdom and America.

In the last edition of the "Index of Treatment" Eardley Holland writes "it is never necessary to use the curette". The American view is summed up in the sentence: "The morbidity and mortality is in direct ratio to the frequency and extent of the invasion of the uterine cavity." American authorities

agree that no attempt to empty the uterus should be made until the temperature has been normal for a week.

Most writers favour the use of the finger, ovum forceps or sponge stick rather than the curette. Personally I place the curette first. The finger requires a greater degree of cervical dilatation; there is more traumatism; the pressing down of the uterus to meet the finger tends to spread infection, and on the whole the use of the finger is more dangerous and difficult and painful (if no anæsthetic be used) than the use of the curette in the hands of a man who has been taught to use the latter.

The ovum forceps is more dangerous and less effectual. The sponge stick is ineffective.

I recommend the inexperienced surgeon to use the curette in those cases in which it is particularly easy to explore the uterine cavity with the finger, so that he can verify the findings of the curette, and thus gain experience.

In my opinion dead tissue in the uterine cavity is a culture medium for organisms, and will surely become infected and spread infection, and therefore should be raked out with the curette without avoidable delay.

When infection has spread outside the uterus so that perimetritis or parametritis has become established, curettage is contraindicated.

In incomplete abortion it is scarcely ever necessary to dilate the cervix before using the curette. If the embryo has already been expelled, one may be quite sure the curette can remove the secundines without further dilatation. If the hæmorrhage becomes negligible after the curettage, it is a sign that the uterus has been completely emptied and *vice versa*.

Technique of Curettage.

In private practice Robb's strap is useful to maintain the patient in the lithotomy position.

Shave and cleanse the vulva and vagina with pledgets of wool soaked in 1% lysol solution, followed by douching with biniodide of mercury solution one in 1,000.

Make careful bimanual examination, noting the size and position of the uterus. Use a posterior vaginal retractor, but on no account a weighted perineal retractor such as Auvard's, which has not seldom permanently injured the pelvic floor. A Sims speculum does very well. Paint the os and the inside of the cervix with tincture of iodine.

Pass the sound, noting the direction and exact length of the uterine cavity. Seize the anterior lip of the os with a good tenaculum forceps such as that which I show you, which McLennan made for me thirty-five years ago, but which was subsequently popularized by Skene. Pass the curette, sharp but not cutting (a blunt curette is unsuitable, because it needs to be used with more force, and therefore causes more traumatism), up to the fundus, and systematically explore the cavity, raking downwards all lumps or hillocks met with. Sometimes it is necessary to lever away the adherent mass. When the decidua is adherent, as it often is in a neglected case, hæmorrhage may be severe; the operator must proceed rapidly with a light but firm touch, knowing

that when the uterus has been completely emptied, bleeding will cease.

The uterus is then washed out with very hot saline solution through a double channel catheter. Finally, pack the cavity lightly with an iodoform gauze two inch bandage soaked in tincture of iodine.

In private practice a large domestic cup may be boiled, the gauze bandage placed in it, tincture of iodine poured on the bandage, the cup held against the posterior vaginal retractor, and the gauze thus passed aseptically to the fundus.

The packing will act as a cork and do more harm than good if you do not make sure of carrying it up to one cornu, then mesially, then to the other cornu.

Why does one pack the uterus? To stimulate contraction, exercise light pressure, act as a drain and perhaps on withdrawal to bring away tiny bits of loose decidua which may have been missed. It is not, however, absolutely necessary. In the old days when there were only the Sydney and Prince Alfred Hospitals, and two or three beds in the Crown Street Women's Hospital, it was impossible to take in even a moiety of the abortion patients applying for admission. Poor women came to the out-patient department, blanched, septic, utterly exhausted, and still bleeding from a neglected abortion. As the least of two evils I performed curettage there and then, which in such cases seriously increases the hæmorrhage temporarily.

To counter this I could not use gauze packing, as there would be no one in the patient's home capable of removing it next day. I found that tincture of iodine became so diluted with blood that it was useless, so I resorted to the liniment of iodine; a piece of wool soaked in this was applied all over the cavity of the uterus.

One felt an immediate and strong contraction of the uterus, the walls literally hugged the pledget of wool and the bleeding ceased.

The patient was sent home in a cab, and directed to stay in bed and to have as much milk and other fluid as she could afford, and to report herself in two weeks.

On one occasion I remember I treated five such patients in this way in the afternoon; I rarely failed to have one such.

As far as I could ascertain there were no deaths; the patients usually turned up looking absolutely resurrected, a matter of frequent comment by visitors and staff.

Nevertheless, one would resort to this method only if it were impossible to deal with the patient otherwise.

Perforation of the Uterus.

Perforation of the uterus occurs from two causes:

(1) Gross neglect of the cardinal principle that no instrument should be passed into the uterus until the size and position have been ascertained bimanually.

(2) Such softening and thinning of the uterine walls by septic processes that even the greatest care fails to avoid perforation. Such cases are fortunately rare, and are unsuitable for curettage. The condition, however, cannot always be diagnosed beforehand, and on this account it is wise to give a hypodermic

injection of pituitrin ten minutes before curettage. This renders the uterine wall firmer, and lessens the danger.

If perforation should occur, the treatment is gently to withdraw the curette, and to leave the condition to Nature helped by ergot, strychnine and pituitrin.

I did a vaginal hysterectomy for a colleague who had the misfortune to perforate the uterus; the patient died. Examination of the specimen showed the margins of the wound made by the curette to be approximated, leading me to think the best policy would have been "masterly inactivity".

Shortly afterwards I pushed the curette through the uterus in a case of my own after expressing the opinion that the uterine walls were very thin, and that perforation might occur. I passed a very small strip of iodoform gauze into the uterus to act as a drain and to incite uterine action to expel decidua of which only a small amount remained *in utero*; the patient recovered.

I have been concerned in two trials of medical men for criminal abortion.

In the first the curette was pushed through the uterine wall just above the internal os, close to left border; the uterine vessels on that side were curetted; the patient died on the table of shock and hæmorrhage. The doctor proved that the poor girl had gone to a nurse before seeing him, and the prosecution was thereupon withdrawn. In excusing himself to me the doctor said "he had endeavoured to follow my teaching, to make a bimanual examination before introducing the curette, but could not feel quite certain as to the situation of the fundus".

An important practical point comes in here. Why was the doctor unable to locate the fundus? Because the pregnancy had advanced to three months. The doctor placed his external hand above the pubes, and palpated bimanually only the lower uterine zone and cervix. If he had begun by palpating the upper part of the abdomen, and had brought his hand down towards the pubes, he could not have failed to find the enlarged uterus. This method should be invariably followed.

The second case was a replica of the first, except that the pelvic colon was curetted through a huge opening in the uterus, and made to appear at the vulva.

I have interpolated these deplorable events in order to impress you with the grave danger attending an attempt to bring away an unbroken ovum through an undilated cervix. If I have convinced members of the truth of this view I shall be well content.

Reference.

- ⁽¹⁾ "The Medical Annual", 1931.

PATHOLOGICAL FRACTURES.¹

By P. L. HIPSLEY, M.D., F.R.A.C.S.,

Honorary Surgeon, Royal Alexandra Hospital for Children, Sydney; Honorary Surgeon, Royal Hospital for Women, Paddington.

A PATHOLOGICAL fracture may be defined as a fracture through a bone lesion, due indirectly to an alteration in bone structure or composition. It implies that the violence causing the fracture is of such a trivial nature that it would fail to produce such a fracture in a healthy bone. The term osteospathyrosis is used to denote a condition of patho-

logical fragility of the bones, and clinically two types are recognized: (i) symptomatic, when there is some obvious pathological condition, such as bone tumour, cyst or inflammation, and (ii) idiopathic, in which the ætiological pathology is obscure.

The strength of a bone varies with the age of the individual; and the greater the muscular development, the stronger the bone. As a rule the bones become fragile with age, largely because functional use decreases with age. The bone of an elderly person accustomed to hard physical work, will show less atrophy than that of a younger person unaccustomed to such work. Intracapsular fracture of the neck of the femur, for example, is largely due to senile changes in the bone and might rightly be regarded as a pathological fracture. Such a fracture would be more likely to occur in an elderly person who had for many years ceased to put the muscles to their full functional use.

Senile Changes in Bone.

In senile bone the medullary index is high. The medullary index, being the relation between the diameter of the bone and its medullary cavity, indicates the thickness of the bony shell or wall. According to Radash,⁽¹⁾ the medullary index is lowest in reptiles, being 26.1%, and highest in birds, being 159.0%. The average figure in human beings is 38.6%. In senility the bones become reduced in diameter, weight and strength, and they become porous and fragile. The thinning process begins in the Haversian system, nearest the medulla. The lamellæ around the Haversian canals gradually disintegrate, and thus cavities are formed by the coalescence of these canals. These changes may be obvious to the naked eye. The proportion of organic to inorganic material shows a slight variation according to age. At birth compact bone is about 50% organic, in adults about 40%, and in old age about 42%.

Before we consider certain pathological conditions associated with fracture, some aspects of calcium metabolism may be mentioned as having an important bearing on the subject. The primary function of calcium in the body is the formation of bone; but, as Hunter⁽²⁾ points out, the skeleton of the mammal is not only a supporting structure, but is also a reservoir of calcium and phosphorus, and can be drawn on when there is a deficiency of calcium in the tissue, its use as a supporting structure being thereby endangered. Again, according to the same authority, vitamin D, the internal secretion of the parathyroid glands, and an enzyme called phosphatase are other factors acting in conjunction with calcium. Removal of the parathyroid glands has been shown to be followed by a reduction of the calcium content of the serum; and the injection of the active principle of the parathyroid glands restores the serum calcium to normal. That the internal secretion of the parathyroid glands has something to do with the causation of *osteitis fibrosa cystica*, has been amply demonstrated; but the whole question of the relationship of the para-

¹ Read at a meeting of the Section of Orthopædics of the New South Wales Branch of the British Medical Association on September 4, 1932.

thyroid glands to bone metabolism is still *sub judice* and requires more extensive research before any definite conclusions can be arrived at.

In our present state of knowledge it is difficult to classify pathological fractures satisfactorily under separate headings. Eisendrath⁽³⁾ gives a classification which Codman⁽⁴⁾ approves of; hence I will adopt this classification, merely adding a few diseases which have come to light since Eisendrath's original survey of the subject and omitting bone aneurysms from his classification, as, according to Kolodny,⁽⁵⁾ aneurysmal skeletal tumours do not occur.

- (1) Fractures resulting from bone fragility of local origin.
 - (A) Through tumours.
 - (a) Primary and metastatic sarcoma.
 - (b) Metastatic carcinoma.
 - (c) Adeno-carcinoma from the thyroid (osseous metastases).
 - (d) Enchondroma and benign osseous cysts.
 - (e) Metastatic hypernephroma.
 - (f) Echinococcus cysts.
 - (B) Inflammatory processes.
 - (a) Pyogenic osteomyelitis.
 - (b) Tuberculous osteomyelitis.
 - (c) Syphilitic osteomyelitis.
- (2) Fractures resulting from bone fragility due to some general disease.
 - (A) Neuropathies.
 - (a) *Tabes dorsalis*.
 - (b) Syringomyelia.
 - (c) Mental disease.
 - (B) Senile changes.
 - (C) Exhausting chronic diseases.
 - (D) Atrophy due to non-use.
 - (E) Scurvy.
 - (F) Rickets and osteomalacia.
 - (G) Renal rickets, *osteitis deformans*, generalized *osteitis fibrosa*, Gaucher's disease, hunger osteopathy, intestinal infantilism, hyperthyroidism and hyperparathyroidism, hypertelorism.
- (3) Fractures resulting from idiopathic fragility of bone. *Osteogenesis imperfecta*.

Bone Tumours.

Any variety of bone tumour may be the cause of a pathological fracture, since they necessarily produce an alteration in bone structure. Benign giant cell tumours only rarely cause fracture. Malignant tumours, however, owing to the rapid destruction of the bone cortex, frequently do so. Osteogenic sarcoma, Ewing's tumour, and multiple myelomata are so frequently associated with fractures that a brief description of each of them will not be out of place.

Osteogenic Sarcoma.—Under the heading osteogenic sarcoma are included the main group of primary malignant tumours of bone. Their composition varies, some being composed mainly of fibrous tissue elements, some of myxomatous tissue, whilst others are mainly cartilaginous or bony. All of them, however, have their origin in cells which normally develop into osteoblasts; but for some unexplained reason this process becomes arrested and the cell takes on malignant growth, the composition of the tumour depending on the stage of development at which malignancy occurs. Their point of origin in the bone structure varies, some appearing to begin in the periosteum, others in the

medulla, and some in the cortex. Their favourite site is the metaphysis of the long bones, particularly the lower end of the femur and the upper end of the tibia; these two positions account for about 80% of the cases. They occur most frequently at about the end of the second decade. Pain, associated later with fever, and leucocytosis are symptoms which are apt to lead to an incorrect diagnosis of osteomyelitis. The radiographic appearance in osteogenic sarcomata, as in other bone tumours, is not always so characteristic that a diagnosis can be made on this alone.

Pathological fractures are not absolutely typical of osteogenic sarcoma, and they occur more frequently where the growth originates in the medulla. Although pain is usually the first symptom, a pathological fracture may be the first sign which brings the patient under the notice of the surgeon.

Ewing's Tumour.—Ewing's tumour affects young patients, generally under twenty-one years of age. It frequently begins with symptoms resembling osteomyelitis, and is often diagnosed as such. Pain, tenderness and high temperature are common to both conditions, and neither the radiographer, after X ray examination, nor the pathologist, after a biopsy, can be absolutely depended on to give a correct diagnosis. When occurring in a long bone, it favours the shaft rather than the ends of the bone. According to Ewing, it arises from the endothelial cells of the marrow and may spread along the entire shaft before penetrating the cortex. It sometimes grows very rapidly, and necrosis of portion of the tumour leads to the formation of material resembling pus. The tumour cells spread between the bone lamellae, making the bone appear thicker than normal and causing the rather characteristic onion-like layers which are seen in a typical radiograph. The tumour penetrates the periosteum and invades the tissues. Pathological fractures are not uncommon.

Multiple Myeloma.—Multiple myeloma is rather rarer than the other two varieties of malignant bone tumour and occurs in older patients. According to Kolodny, 80% of recorded cases occur between the ages of forty and seventy years. The condition has its origin in the specific bone marrow cells and thus always appears first in the medulla. It sometimes appears to begin simultaneously in the medullary cavity of several bones and at several points in the same bone. The lesions are characterized by bone destruction, with complete absence of bone formation. It has a predilection for the ribs, spine, humerus, femur and pelvis. The onset with pain, sometimes associated with fever, often leads to the diagnosis of rheumatism. Pathological fractures are more common in multiple myelomata than in any other form of bone tumour; and they may occur within a few weeks of the first symptom.

Solitary or Local Fibro-Cystic Disease of Bone.

Solitary or local fibrocystic disease of bone usually starts in youth, before complete ossification

of the epiphyses. The cyst in the early stages of the disease is generally found at the end of the diaphysis of one of the long bones; and as it enlarges, it expands and thins the cortex. Later, with the growth of the bone, the cyst appears nearer the middle of the shaft. Sometimes several bones are affected, and the condition shows a predilection for the femur, tibia and humerus. The disease may persist indefinitely, may become arrested, or undergo spontaneous cure. Pathological fracture, often without displacement, may be the first sign to call attention to the disease. Severe pain is complained of after slight injury, and an X ray examination reveals a fracture which is often incomplete. There is no evidence of any alteration of calcium metabolism in this disease, thus distinguishing it from generalized *osteitis fibrosa*, in which hyperparathyroidism is so common.

Generalized Osteitis Fibrosa Cystica.

Generalized *osteitis fibrosa cystica* occurs twice as frequently in women as in men, and generally occurs between the ages of thirty and fifty-five years. Practically all the bones of the skeleton may be affected. The compact tissue becomes less dense and the spongiosa is similarly affected. The characteristic changes are due to a lacunar resorption by osteoclasts and not to deficient calcification of osteoid tissue, such as occurs in rickets and osteomalacia. Spontaneous fractures sometimes occur in the long bones. This disease has been found to be associated with tumour of the parathyroid glands with sufficient frequency to show that the combination is not accidental. The density of the bone is lessened and the calcium content of the blood increased. When a parathyroid tumour has been found in association with the disease, removal of the tumour is followed by restoration of the calcium content of the blood to normal and by an increase in the density of the bones.

The Neuropathies.

Tabes dorsalis, syringomyelia and mental disease are all at times associated with spontaneous fractures. In tabes fractures occur in the shafts of the long bones and are not uncommon in association with Charcot's joints; and multiple fractures are sometimes seen in the metatarsals and phalanges. The pathological condition underlying the fracture is a deficiency in mineral matter, and the Haversian canals are said to be enlarged and filled with fatty substance. The incoordination and loss of tactile sensation would be contributory factors. The fractures often unite with excessive callus formation.

Syringomyelia sometimes causes a rarefying osteitis which may result in spontaneous fractures.

It is well known that in certain forms of insanity fractures occur from very slight injuries, and this is important from a medico-legal standpoint.

Atrophy from Non-Use and Debilitating Diseases.

According to Tumpeer and McNeally,⁽⁶⁾ bone atrophy runs parallel to muscle wasting in polio-

myelitis, and the atrophy appears to be due to non-use rather than to trophic interference. The size, weight, strength, thickness, length and texture of the bone are all affected. The diminished density is readily seen in an X ray picture, and the affected bone fractures more readily than the healthy member. Similar changes are seen in bones after debilitating diseases, as the bones share in the general wasting.

Osteitis Deformans.

Philip Lewin⁽⁷⁾ found that in 251 recorded cases of *osteitis deformans*, a pathological fracture occurred in 15. He concluded that in this disease there is a substitution of organic for inorganic matter in the bones. Knaggs⁽⁸⁾ states that "the morbid process consists in a complete or almost complete removal of the original osseous tissue and the substitution for it of a cancellous bone of a finely porous character". The disease is one that rarely begins before the age of forty years. Pathological fractures are more common in the earlier stages of the disease, because later on ossification apparently becomes more pronounced than absorption, and in the last stages the bones may become dense, hard and heavy. The lightness of the bone in this disease was impressed on me some time ago by observing a patient whom I knew to be suffering from this complaint, swimming in salt water. He could sit in the water with arms folded, showing very little tendency to sink.

Scurvy, Rickets and Osteomalacia.

In scurvy, rickets and osteomalacia, all associated with avitaminosis, spontaneous fractures occur, although bending of the bones without actual fracture is perhaps a commoner condition. In rickets and osteomalacia there seems to be an arrest in the process of calcification, and the osteoid tissue, under suitable treatment, becomes converted into bone by a process of calcium deposition. The essential abnormality in these two diseases is the same, and osteomalacia may be regarded as a manifestation of rickets in adults.

Hydatid Cysts of Bone.

When hydatid cysts occur in bone, they frequently cause spontaneous fractures. The cysts differ from those seen in the liver, in being multiple, and the cysts are scattered through the medulla. Clinically one finds pain, egg shell crackling and uneven enlargement of the bone. Any of the bones may be affected, but the femur, tibia, humerus and pelvis are more often invaded than other bones.

Osteogenesis Imperfecta.

Osteogenesis imperfecta has an hereditary tendency and is characterized by such fragility of the bones that fractures occur from very trivial causes. There are four clinical varieties, according to the age at which the disease begins. One variety begins in the fetus, a second in the infant, a third in the child or adolescent, and the fourth in adult life. These four groups are closely associated, because

patients suffering from the disease in a mild form and who are able to bear children, may transmit the disease, so that their offspring may suffer from any of the four clinical varieties. The fractures are almost painless and unite slowly, with a minimum formation of callus and with frequent deformity. The X ray picture shows a very thin cortex with a large medullary cavity. There is no abnormality of the serum calcium content in this disease.

Renal Rickets.

In renal rickets there is a disturbance of the calcium and phosphorus metabolism, resulting in decalcification of the bones, dwarfism and delayed union of the epiphyses. The condition is due to chronic nephritis, and true rickets has nothing to do with it. Both bending of the bones and pathological fractures readily occur.

Albers-Schönberg Disease, or Marble Bones.

Albers-Schönberg disease is rare and has an hereditary tendency, sometimes affecting several members of one family. Pirie⁽⁶⁾ mentions a case where X ray examination showed a fetus with fracture *in utero*. The calcium content of the blood is said to be normal. The name "marble bones" was given to the disease on account of the dense appearance of the bones as seen in the X ray picture, but in reality the affected part of the bone is very soft and chalky, and fractures readily.

Gaucher's Disease.

In Gaucher's disease, in addition to the enlargement of the spleen, liver and lymphatic glands, there is a marked general osteoporosis resembling somewhat senile osteoporosis, and pathological fractures have frequently been reported.

Hunger Osteopathy.

The name "hunger osteopathy" has been given to a deficiency disease which was common in Europe during the latter part of the Great War. It affects elderly people more often than children. There is an extreme degree of osteoporosis; the cortex of the bones becomes thinned and the spongiosa extremely soft. Milkman⁽¹⁰⁾ reports a case in a woman of forty years, whose long bones showed numerous pseudo-fractures. As one would expect from the marked wasting of the bones, pathological fractures occur frequently.

Intestinal Infantilism.

Intestinal infantilism is sometimes called idiopathic steatorrhœa of adults. According to Hunter,⁽¹¹⁾ this complaint is associated with a low serum calcium and dwarfism. The X ray picture shows diminished density of the bones and delayed union of the epiphyses. Bending of the bones occurs readily and fractures are not uncommon.

Occupational Diseases.

Spontaneous fractures occur in certain occupational diseases. Martland⁽¹²⁾ has called attention to the fact that pathological fractures sometimes occur in watch dial painters who use so-called radium paint. A condition of osteitis is produced,

due to the deposition of insoluble sulphates of radium, mesothorium and radiothorium in the bones.

Exophthalmic Goitre.

Exophthalmic goitre sometimes causes osteoporosis resulting in spontaneous fracture. According to Hunter,⁽¹³⁾ there is no increase in the calcium content in the blood in hyperthyroidism, as there is in hyperparathyroidism, but in both there is a removal of calcium from the skeleton.

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BLOOD TRANSFUSION: AN APPARATUS FOR TRANSFUSION OF CITRATED BLOOD.¹

By E. H. STOKES, M.B., Ch.M. (Sydney),

Honorary Assistant Physician, Sydney Hospital; Tutor in Medicine, University of Sydney; Honorary Consulting Physician, St. George District Hospital, Sydney.

WITH the numerous devices for blood transfusion now in use, it may seem superfluous to introduce yet another, but the apparatus to be described appears to have certain advantages and to be simpler in its method of operation than many of those commonly used.

In 1922 Keynes⁽¹⁾ wrote:

The indications for blood transfusion are gradually becoming more numerous as experience of its effects accumulates, and there can be no doubt that the value of transfusion as a therapeutic measure is destined to become much more generally recognized than it is at the present time. Lack of knowledge, together with an exaggerated idea of the difficulties of the process, is the chief obstacle to its more extended use.

Without attempting to give a complete list of the indications for blood transfusion, one may say that it is a valuable therapeutic measure in such conditions as the following: acute anæmias (as after severe hæmorrhage), chronic anæmias (for example, the anæmia resulting from bleeding uterine fibroids), pernicious anæmia, hæmorrhagic diseases and septicæmias.

¹ The apparatus described herein was shown at a meeting of the New South Wales Branch of the British Medical Association on July 14, 1932.

It is unnecessary to stress the importance of direct matching of the donor and recipient before each transfusion and of taking the precaution of seeing that the donor is free from communicable disease (such as syphilis or malaria).

Description of the Apparatus.

The following description can easily be followed by reference to the accompanying illustrations.

The essential part of the apparatus is a glass bottle of about 900 cubic centimetres capacity, surrounded by a metal heating jacket (see Figure I).

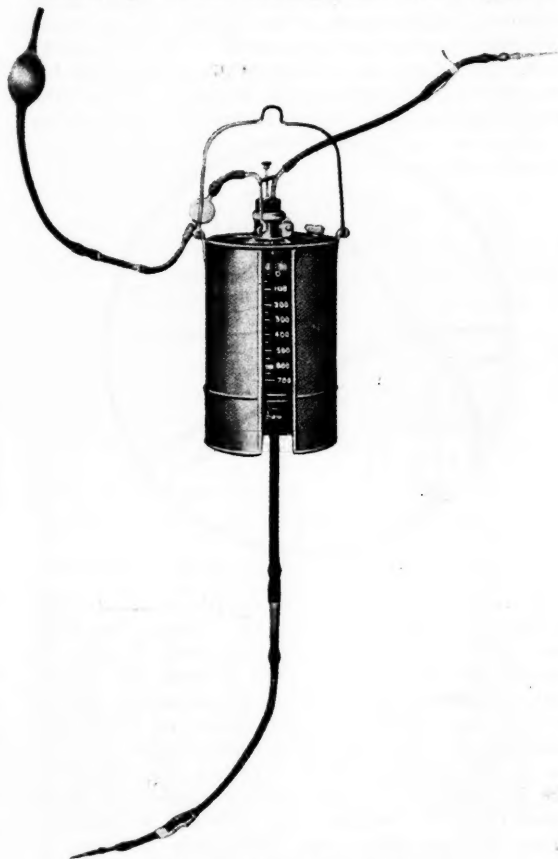


FIGURE I.—The apparatus.

The bottle is marked in 100 cubic centimetres, the uppermost graduation being at 0 and the lowermost 700. Intermediate markings representing 50 cubic centimetres are also shown. If it be desired, a second set of graduations, with the markings reversed, can be placed on the bottle. This bottle is of a convenient size, as it is seldom necessary to give a larger transfusion than 700 cubic centimetres of citrated blood.

The bottle has apertures at both its upper and lower ends. Into the upper aperture (2.5 centimetres or one inch wide) is placed a rubber cork with two holes, each 7.5 millimetres (five-sixteenths of an inch) in diameter. The cork is held in position by a special clip, consisting of two vertical pieces

of wire which hook into two lugs projecting from a band on the neck of the bottle. These two vertical pieces are connected at their upper ends by a bridge. Through a central tapped hole in this there passes a threaded rod which bears on a small metal plate on top of the cork. By suitable manipulation the cork can be pressed firmly into the bottle.

The glass tube shown on the right of the cork is about 10 centimetres (four inches) long and is bent at the junction of its lower two-thirds and upper third at an angle of about 135°. The lower end of this tube projects through the cork for about 3.75 centimetres (one and a half inches) into the bottle. To the other end of this tube is attached a piece of rubber tubing (afterwards referred to as the collection tube) about 30 centimetres (twelve inches) in length. A lever clip is threaded over this rubber tube, to the distal end of which is fitted a wide-based adapter for connexion either with a French's needle or a stainless steel needle of wide bore and with a short bevel, 3.1 centimetres (one and a quarter inches) long, 2.1 millimetres in external diameter, and 1.25 millimetres in internal diameter.

The other hole in the cork carries a glass tube, about 7.5 centimetres (three inches) long, bent at the junction of its lower two-thirds and upper third at a right angle. The lower end of this tube is so arranged that it is just flush with the lower surface of the cork. The other end is connected by means of a short length of rubber tubing with a glass bulb filled with cotton wool, which acts as an air filter. A further piece of rubber tubing and a small length of glass tubing are attached to the other end of the bulb. A Higginson's syringe, with a small piece of rubber tubing fitted over the terminal valve and with the nozzle removed, is employed. This syringe can be used as a sucker by slipping the rubber tube at the valve over the glass tubing or, alternatively, as a blower, by similarly placing the end from which the nozzle has been removed over the glass tubing.

From the centre of the lower end of the bottle a bulbous spout, 4.3 centimetres (one and three-quarter inches) in length and 7.5 millimetres (five-sixteenths of an inch) in internal diameter, projects. This spout is inserted into a piece of rubber tubing about 20 centimetres (eight inches) long. The attachment may be made more secure by means of a metallic screw clip. The distal end of this rubber tubing is slipped over a glass tube which is drawn down at its distal end to fit a piece of smaller bored rubber tubing about 30 centimetres (twelve inches) long, with clip and adapter, which is a facsimile of the collection tube. These two pieces of rubber tubing, together with the glass "window", constitute the delivery tube. Into the adapter attached to the distal end of this tube a fine intravenous needle, made of stainless steel, 3.1 centimetres (one and a quarter inches) long, 1.25 millimetres in external diameter, and 0.85 millimetre in internal diameter, may be fitted.

The water jacket, which is open in front in order that the scale on the bottle may be visible, is made of nickel-plated brass, dull finished on the side next

to the bottle and polished on its exterior. The space between the walls of the jacket is 2.5 centimetres (one inch) wide. The bottle, which fits loosely, is supported by means of a shelf at the bottom of the jacket. This shelf is perforated by an aperture 4.3 centimetres (one and three-quarter inches) in diameter, through which the spout of the bottle projects. A handle about 17.5 centimetres (seven inches) high is attached to the upper end of the jacket, while a metal "petticoat" 6.25 centimetres (two and a half inches) deep projects from the jacket. An inlet for water, with screw cap, is placed in the upper end of the jacket, while an outlet tap (not shown in the diagram, being hidden by the metal "petticoat") is inserted in the lower end. The jacket is 15.0 centimetres (six inches) in diameter and 22.5 centimetres (nine inches) high (including the "petticoat") and is of 1,420 cubic centimetres (two and a half pints) capacity.

The apparatus may be sterilized either by autoclaving or by placing in cold water which is brought to boiling point. If autoclaving be more convenient, and this is usually done in hospital practice, the adapters and needles should not be placed in the autoclave, but should be boiled. Should the apparatus be boiled, it may be quickly assembled at the time of the transfusion, the air filter being then filled with sterile cotton wool. Before the apparatus is used, it is wise to place a little cotton wool between the jacket and the bottle to protect the bottle. The lumina of the needles are plugged with closely fitting obturators when not in use, their patency being thus insured. Immediately before use the needles are kept in a flat dish covered with sterile sodium citrate solution.

Method of Performing the Transfusion.

The operation of blood transfusion consists of two parts: (i) collection of the blood from the donor, (ii) delivery of the blood to the recipient.

Collection of Blood.

The water jacket is filled with water at 53.3° C. (130° F.). Four ounces of sterile 2% sodium citrate solution at 37.8° C. (100° F.) are sucked by means of the Higginson's syringe from a graduated container through the collection tube into the bottle and allowed to run down through the end of the delivery tube by momentarily opening the clip on this tube. (The top of the citrate solution usually reaches the 650 cubic centimetre mark.) The clip on the collection tube is then closed while the latter is still full of citrate solution. By these means the tubes used for collection and delivery of the blood are filled with citrate solution. The end of the delivery tube is then placed on top of the cork clip, where it remains till required. The apparatus is shaken so as to distribute the citrate solution all over the interior of the bottle and is then placed on a small table so that the top of the cork is below the level of the donor's arm.

The skin of the donor's arm, which has previously been washed, shaved and prepared by means of antiseptic lotions, is swabbed over with ether and an alcoholic solution (such as one in 500 spirituous

solution of biniodide of mercury). A tourniquet is placed round the arm just tightly enough to produce venous congestion and the donor is instructed to close and open the hand. The skin of the antecubital fossa is then swabbed over with sodium citrate solution and the veins are made to stand out. A suitable vein (usually the median basilic) is selected and, should a French's needle be used, a small area of skin, about six millimetres (a quarter of an inch) in diameter, over the selected vein is injected with about two minims of local anæsthetic (say 2% "Novocain"). A longitudinal incision about three millimetres (one-eighth of an inch) long is made into the anæsthetized area with a fine tenotomy knife. The donor is then instructed to clench his fist and the French's needle is taken out of the citrate solution and inserted through the incision



FIGURE II.—Showing the collection of blood.

in the skin into the vein either with or against the stream, as shown in Figure II. Should the wide bore needle described above be used, it can be inserted directly into the vein without the use of local anæsthetic or incision. If the needle enters the vein successfully, a good stream of blood will issue from it. The adapter is then plugged into the end of the needle and the clip on the collection tube is released. A satisfactory stream of blood should enter the bottle. The assistant, by slightly tilting the apparatus and continually rotating it, insures a thorough mixing of the blood with the citrate solution. The flow of blood from the donor is assisted by closing and unclosing the hand forcibly. Should everything go well with this part of the operation, it is usually possible to collect 600 cubic centimetres of blood in about five minutes.

If a good stream of blood does not issue from the needle, there will be clotting of blood before it reaches the citrate solution. In that case the needle should be reinserted into the same or another vein. It is usually necessary to change the collection tube and to run a little citrate solution through it before attempting the collection again. However, with careful attention to technique, these second attempts are not common.

As upon the collection of the blood in a continuous stream and the rapid mixing of it with the

citrate solution depends the success of the whole transfusion, it is essential to perform this part of the operation properly.

Should it not look possible to enter the vein with a needle, it will be necessary to cut down on the vein and insert a glass cannula, the adapter being removed to allow insertion of the cannula into the collection tube.

It will thus be seen that the collection is aided by the donor closing and opening his hand, by gravity (the bottle being placed below the donor's arm) and, to a very slight extent, by using the Higginson's syringe as a sucker. The fact of the glass tube which is inserted in the cork being bent to an angle of 135° tends to eliminate friction.

The blood having been collected, the clip on the collection tube is closed, the tourniquet and the needle are removed, and a firm pad is applied to the donor's arm. The apparatus is then taken to the recipient.

Delivery of Blood.

The apparatus is suspended by means of the handle from any convenient fixture. The Higginson's syringe is reversed so that it can be used as a blower.

If the veins of the recipient are large, the blood can be delivered by means of the fine intravenous needle. A tourniquet is placed on the arm, the skin which has been previously prepared, is swabbed over with ether and an alcoholic lotion and then with sodium citrate solution. A little blood is allowed to flow through the delivery tube. The needle is taken out of the citrate solution and is inserted into the vein selected. If the vein is successfully entered, a good stream of blood will flow back from the needle into which the adapter in the delivery tube is plugged. There is no danger of air embolism, as the two streams meet. The tourniquet is then taken off the arm and the blood flows in, a little over twenty minutes being taken to deliver 700 cubic centimetres of citrated blood. The blood flows in by gravity, aided by an occasional pressure from the Higginson's syringe (Figure III).

Should the vein not be suitable for needling, a little local anæsthetic solution is injected and an

oblique incision is made over the vein. The vein is isolated and a small V-shaped opening is made, into which a glass cannula attached to the delivery tube is inserted, the adapter having been removed.

The blood will flow somewhat more rapidly with a cannula than with the fine needle, but the rate of flow can be slowed by lowering the apparatus and by not using the Higginson's syringe. In certain cases it may be advisable to take at least forty minutes to deliver 700 cubic centimetres. The flow of blood can be easily watched through the vertical opening in the jacket, and when it is seen that the bottle is empty, the clip on the delivery tube can be closed, the needle withdrawn and a pad applied to the recipient's arm.

It will be noted that the water was placed in the jacket at 53.3°C . (130°F .). It was found that with a room temperature of 21.1°C . (70°F .) the blood could be delivered at approximately body temperature at the end of three-quarters of an hour at least. Should there be delay in the operation for any reason, or should it be desired to keep the blood for longer than three-quarters of an hour before delivering it, the temperature may be maintained by removing a pint of water through the tap at the bottom of the jacket and replacing it with a pint of water at 48.8°C . (120°F .). Further, by repeating this manœuvre every half hour, it is possible to keep the blood at body temperature indefinitely. The importance of maintaining the blood at body temperature has been stressed by various writers. For this purpose Gibson⁽²⁾ and Shera⁽³⁾ used a thermostat in their respective apparatus. A somewhat similar water jacket to that described in this article was used by Blair Bell⁽⁴⁾ in his apparatus. The method of maintaining the temperature by means of a water jacket appears to be simpler than the use of a thermostat. During the course of this work a vacuum flask was used for the same purpose, but as the flask is more liable to be broken than the bottle used in the apparatus, and as it would constitute the most expensive part of the apparatus, it was abandoned in favour of the water jacket.

Precautions.

1. Should the rubber tubing show any signs of wear, it should be replaced. This precaution applies especially to the collection and the delivery tubes. However, with reasonable care these tubes will last for at least five transfusions.
2. Before use it is necessary to see that all parts fit accurately, and especially to be sure that the adapters and glass pieces fit firmly into the rubber tubing.
3. Immediately after use the whole apparatus should be washed out with water and citrate solution. It is essential to see that all blood clot is cleaned out of the needles, adapters and tubes. The needles should be well oiled and the obturators placed in their lumina before they are put away.
4. A decision as to whether needles or cannulae should be used in any particular case should be

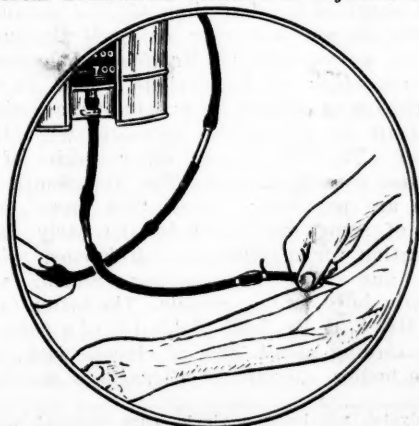


FIGURE III.—Showing delivery of blood.

arrived at before the transfusion is commenced. Futile attempts to insert needles into veins obviously unsuitable for needling should be avoided.

Advantages.

1. The apparatus can be used by one medical man with assistance from an intelligent layman or nurse. It can be used at the bedside.

2. It is compact, the one bottle being used for the collection and delivery of the blood.

3. The blood is protected against contamination.

4. The blood is maintained at approximately body temperature during the transfusion.

5. Either needles or cannulae can be used. This is a great advantage. (Needling does not destroy the vein in the same way as dissection does. Blood can be collected satisfactorily from the majority of donors by means of either French's needle or the wide bore needle, and further, the donor can go to work within a day or two of giving his blood. Needling is specially valuable to the recipient when multiple transfusions are necessary.)

6. The apparatus is not costly and is easily constructed.

7. If necessary, the apparatus can be sterilized by boiling and can be assembled under sterile conditions at the time of the operation.

8. If desired, the apparatus could be used for venesection or for the intravenous injection of fluids other than blood.

Acknowledgements.

I desire to thank various colleagues (more especially Dr. A. E. Finckh, my father, Dr. E. S. Stokes, and Dr. Langloh Johnston) for valuable suggestions, and also to acknowledge the assistance given by Mr. A. Heyde, of the Sydney Hospital, and by Mr. W. I. C. Miles and Mr. G. Sinclair, of Elliotts and Australian Drug, Limited.

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EUCALYPTOL OR CINEOLE.

By JOHN MACPHERSON, M.A., B.Sc., M.B., Ch.M. (Sydney),
Lecturer in Materia Medica, University of Sydney.

A NEW drug introduced into the British Pharmacopœia of 1932 is eucalyptol or cineole. The terms are not exactly synonymous, as it is enjoined that eucalyptol must contain not less than 97.5% by weight of cineole, as shown by the ortho-cresol method. It is described as the anhydride of 1:8-terpin or menthan 1:8 diol, and may be obtained from eucalyptus oil. Freezing point must not be below 0° C. The dose is one to three minims (six to eighteen centimils). An appendix to the pharmacopœia deals with the estimation of cineole in oil of cajuput, oil of eucalyptus and in eucalyptol. E. Jahns was the first to place correctly the

chemical position of eucalyptol. He obtained it in a comparatively pure state, with a specific gravity of 0.923 at 16° C. from the compound formed with dry hydrochloric acid gas. He showed its formula to be $C^{10}H^{18}O$ —an oxide analogous with cineole. The spelling cineole has replaced cineol in conformity with the rule that compounds which are not alcohols whose names terminated in "ol" previously, must now be spelled with a terminal "ole".¹ The reaction with iodol, first described by Hirschsohn, can be used for the detection of a small amount of eucalyptol. The determination can be made by dissolving in a small quantity of the oil as much iodol as it will readily take up, gently heating if necessary. After a short time the crystalline compound separates if eucalyptol be present, and can be purified from alcohol, when it will be found to melt at about 112° C. Eucalyptol occurs in most eucalyptus oils, but in very varying quantities in different species. Eucalyptol tends to diminish with increase of phellandrene in eucalyptus oils.

Cineole is a constituent of the pharmacopœial oil of peppermint and of ginger (the rhizome of *Zingiber officinale* Roscoe). It is likewise contained in Oliver's bark, derived from *Cinnamomum oliveri* Bailey, which is indigenous to the coastal regions of northern New South Wales and Queensland, being popularly termed black sassafras, but also known as brown or white sassafras or pomatum wood. This plant was in the 1914 pharmacopœia, but has been omitted from the new edition.

The new pharmacopœia requires the cineole content of oil of cajuput to be not less than 50% and not more than 60% by weight. This approximates to the standard of the United States Pharmacopœia, where the requirement is 55% by volume. Much controversy has taken place as to the exact species of melaleuca furnishing oil of cajuput. The new pharmacopœia states *Melaleuca leucadendron* Linné and other species. *Melaleuca minor* is not mentioned. Possibly it is deemed to be a variety of *Melaleuca leucadendron*. The natural habitat of *Melaleuca leucadendron* extends to northern and eastern Australia, where it is known as the broad leaf tea tree or paper bark tree. The 1914 pharmacopœia required not less than 45% of cineole. In the 1898 edition *Melaleuca cajuputi* Roxburgh is given as a synonym of *Melaleuca leucadendron*. *Melaleuca minor* was in previous issues. In earlier years cineole in cajuput oil was known as cajuputol or hydrate of cajuputene, isomeric with Borneo camphor. The oils of some other species of melaleuca also contain cineole. The New South Wales species are popularly termed "tea trees", as the leaves of some were used in the early days of colonization for making tea. *Melaleuca ericifolia* Smith and *Melaleuca nodosa* Smith, variety *tenuifolia*, both contain cineole. The latter (according to Mr. A. R. Penfold) yields 1% of a pale yellow oil, containing about 50% of cineole with various terpene bodies. *Melaleuca alternifolia* Maiden and

¹ Eucalyptol, not being a single, pure chemical compound, is exempt from the rule.

Betche and *Melaleuca linariifolia* Smith both yield from 6% to 8% of cineole. *Melaleuca alternifolia* was at one time considered a variety of *Melaleuca linariifolia*. From this species are prepared "Ti-trol" and "Melasol", which are now in extensive use. The Australian aborigines used a cold infusion of the leaves of *Melaleuca leucadendron* for colds, headaches and other ailments. The other species mentioned are all indigenous to Australia. Another Australian species, *Melaleuca uncinata* R. Brown, yields an oil closely resembling cajuput oil, but with a new stearoptene. It has been used medicinally.

Eucalyptus Oils.

The 1898 British Pharmacopœia defined oil of eucalyptus as the oil distilled from the fresh leaves of *Eucalyptus globulus* Labillardière and other species. A due proportion of cineole was required. The 1914 edition indicated *Eucalyptus globulus*, *Eucalyptus dumosa* A. Cunningham and other species to contain not less than 55% by volume of cineole. *Eucalyptus globulus* is the blue gum of New South Wales, Victoria and Tasmania, and *Eucalyptus dumosa* is the "bull mallee" of New South Wales, Victoria and South Australia. The United States' requirements have long been 70% of cineole. The 1932 edition does not indicate any particular species, but the requirements make the choice more restricted. There must be not less than 70% by weight of cineole, and the oil must conform to the limit test for phellandrene of the 1914 issue. Also oil of eucalyptus must comply with a test limiting the aldehyde content by the hydroxylamine process. Limits of optical rotation are now from -5° to $+5^{\circ}$, as compared with -10° to $+10^{\circ}$ of the 1914 edition. Cineole can be readily frozen out from eucalyptus oil and mechanically removed from the terpenes and other bodies which cannot be frozen. The oils of very few species contain 70% of cineole. The venation of the leaves of certain species has characteristics suggestive that the chief constituent of the oil is cineole. R. T. Baker and the late H. G. Smith have done an immense amount of work in investigating the oils of different species of eucalyptus, ably followed by A. R. Penfold and others. The British and other pharmacopœias insist on a high cineole and low phellandrene content; but it is not at all certain that these requirements are entirely justified. The first species to be employed for therapeutic purposes was the Sydney peppermint (*Eucalyptus piperita* Smith). In the very earliest days of colonization Surgeon-General John White and Assistant Surgeon D. Considen used its oil with much benefit for colic and other ailments amongst the convicts, and forwarded some of the oil to England. The cineole content of this oil is comparatively small (less than 30%) and the phellandrene content is large. Other constituents of its oil are piperitone (peppermint ketone), eudesmol and a sesquiterpene. It has been said that phellandrene is irritant and causes coughing, but Dr. E. C. Hall has emphatically controverted such opinion. Dr. Hall's investigations

also cast doubt on the assumption that cineole is the most active and important constituent of eucalyptus oils. It has certainly been proved that cineole is not the most efficient of the constituents of various oils as an antiseptic.

The species of eucalypts which are considered the best for yield of oil and cineole content are as follow: *Eucalyptus polybractea* R. T. Baker, the blue mallee. It has a cineole content of from 57% to over 70%. *Eucalyptus smithii* R. T. Baker is the white top, white ironbark or gully ash, with a cineole content of 70%. *Eucalyptus australiana* is the black peppermint, with a cineole content in the oil of 70%. *Eucalyptus cneorifolia* De Candolle gives 64% of cineole. Another species whose oil yields 70% of cineole is *Eucalyptus bicolor* A. Cunningham, the bastard box. *Eucalyptus cambagei* Deane and Maiden has a variable quantity of cineole, ranging from 54% to 69%. *Eucalyptus dives* Schauer, a peppermint or broad leaf peppermint, may contain up to 75% of cineole or cineole may be quite absent, the phellandrene varying inversely with the cineole. Evidently forms or varieties of this species exist which cannot be distinguished by morphological characters. The oil of *Eucalyptus globulus* contains about 57% of cineole, but may exceed 83%; *Eucalyptus dumosa* from 33% to 50%; *Eucalyptus oleosa* F. von Mueller, the red or water mallee, about 61%, and *Eucalyptus cinerea* F. von Mueller, the Argyle apple, above 50%, with a varying amount of pinene. It should be noted that oil from *Eucalyptus dives*, consisting mainly of phellandrene with a little piperitone, has been found far more active as a germicide than oils containing cineole.

Reports of Cases.

ATRESIA OF THE CERVIX UTERI WITH HÆMATOMETRA FOLLOWING CURETTAGE OF THE UTERUS.

By RALPH WORRELL, M.D., M.Ch., F.R.A.C.S.,
Hon. F.A.C.S.

Honorary Consulting Gynaecological Surgeon,
Sydney Hospital.

THE specimen which I present is the uterus the size of a three months' pregnancy removed by total hysterectomy on May 28, 1932.

The patient, Mrs. S., was aged thirty-one and had had two children. Since the last child, seven years ago, there had been two miscarriages induced and completed by curettage. The last miscarriage took place two years ago. Since then there had been a complete absence of menstruation and every month severe paroxysmal pains confining the patient to bed for two days. Two weeks before consulting me she had been admitted to a country hospital as suffering from "an acute abdomen", but was discharged in a week. The hospital doctor told her the uterus was greatly enlarged and should be removed.

On examination the uterus was the size of a three months' pregnancy, symmetrical and much firmer than a normal pregnancy. Breast changes were absent.

I diagnosed missed abortion and having had experience of the difficulty of emptying the uterus in such a condition, I advised hysterectomy, to which the patient readily assented. This was performed on June 2 by my method, of which the specimen gives a good illustration.

The pelvic serosa was a deep-seated red and covered with small adherent blood coagula. A slight amount of very dark blood could be expressed from each tube.

Examination of the specimen showed the uterus to be distended with thick tarry menstrual blood, some of which could be squeezed from the fimbriated ends of the tubes. The walls were enormously thickened and the endometrium hard and corrugated. A sound could not be passed through the inner os.

I have never met with or read of atresia of the cervix produced by curettage (hence the mistaken diagnosis), but Dr. Cedric Bowker kindly sent me a paper by Dr. Bass in the *Zentralblatt für Gynäkologie* of January 22, 1927, in which it was stated that Dr. Wolff Feuchtwanger and Dr. Loebel had reported similar cases and that, since abortion had been legalized in Russia, it had been found to be a relatively common occurrence (20 cases in 1,500 abortions in the previous eighteen months). The cause was attributed to excessively energetic curettage, especially in the region of the internal os, along with insufficient dilatation. These authors sometimes found the uterus not enlarged; this anachronism they consider may be due to the imprisoned blood compressing the mucosa and its blood vessels, the blood subsequently becoming absorbed to a great extent.



Hæmatometra of two years' standing, due to atresia of the internal os following curettage for induced abortion two years previously. Removed by total hysterectomy, Worrall method. Note that the outer half of cervical muscularis has been allowed to remain. Histologically, the connective tissue is more compact than usual. There is some glandular tissue near the endometrium.

Comment.

The case is of interest on account of its rarity, also as an example of the danger of misuse of the curette and the difficulties of diagnosing such a condition. The photograph illustrates the enormous thickening of the uterine wall due to vain attempts to expel the uterine contents, and also the method of hysterectomy.

Reviews.

IRRIGATION OF THE COLON.

The gentleman who postponed his contemplated suicide because his bowels had acted would have read with delight, had he lived today, Dr. W. Kerr Russell's account

of "Colonic Irrigation".¹ The historical account of the "clysters" would have filled him with sympathetic interest in the human family struggling with clumsy instruments to attain the blissful peace of mind brought about by the knowledge of an empty and clean washed colon. He would have revelled in the description of modern apparatus and would have envied the fortunate fellow lying in a bath and watching his faecal colon contents being forced by his own expulsive efforts up an inclined glass tube to the "faecal container". He might have shuddered at the thought of the consequences of something coming unstuck, but would probably not have been deterred by such unmanly shrinking from rushing to the nearest institution fitted with such a machine and by repeated visits attaining lasting peace.

Dr. Russell gives an account of methods of colonic irrigation, ancient and modern, and devotes chapters to anatomy and physiology as well as to a description of faeces with the flora and parasites of the intestine. He mentions possible contraindications and dangers of colon lavage and a lengthy list of conditions which have been benefited by such measures. While most practitioners are fully alive to the dangers of a chronically loaded colon, few, at least in this country, are aware of the elaborate apparatus which has been evolved for the remedy of such by irrigation or lavage. It is open to question whether results are any better with such than with simpler methods, and the cost of instalment would be prohibitive in most institutions. Outside an institution the apparatus described would be impossible.

THE VALUE OF LABORATORY METHODS.

In "Clinical Interpretation of Laboratory Reports", by Albert S. Welch, an attempt is made to present to clinicians a study of the values of qualitative and quantitative biochemical methods, of smears, cultures, cutaneous reactions, tissue examinations, electrocardiograms and forensic investigations.² The author has included brief references to very many tests, which are chiefly of historic interest, and has thus greatly increased the bulk of the book, though adding little to its usefulness. A more detailed discussion of the significance of certain well known laboratory methods, such as the estimation of blood urea, would increase greatly the value of the work.

To state that "Teichmann's test depends upon the formation of peculiar microscopical sized crystals after chemicals have been added to the unknown specimen" is certainly not very illuminating. In dismissing the urea concentration test with the brief remark that it yields no clinical data which cannot be secured by other means, the author may be right, but surely a method which is used by thousands of medical men throughout the world deserves some further consideration. Again, it would be a distinct advantage in mentioning the indigo-carmin test to refer to the time factor in relation to the excretion of the dye.

Despite these and other shortcomings, the book contains a considerable amount of useful information, especially in the chapters devoted to blood chemistry, gastric contents, skin tests, and electrocardiograms. It is certainly true that many practitioners fail to appreciate the exact significance of laboratory reports, and Dr. Welch has served a useful purpose in attempting to make the clinician more familiar with the interpretation of data supplied by the analyst and technician. With the greater laboratory facilities associated with modern medical education the recent medical graduate's appreciation of these tests should be greater than that of the practitioner of a decade ago. Nevertheless, graduates, both recent and those of more mature years, are constantly in need of refreshing their memories in the interpretation of clinical tests.

The book contains a useful bibliography, but one which is extraordinarily deficient in references to the extensive British literature of the subject.

¹ "Colonic Irrigation", by W. Kerr Russell, M.D., B.S.; 1932. Edinburgh: E. and S. Livingstone. Demy 8vo., pp. 199, with illustrations.

² "Clinical Interpretation of Laboratory Reports", by A. S. Welch, A.B., M.D.; 1932. Philadelphia: P. Blakiston's Son and Company. Demy 8vo., pp. 380, with 16 illustrations and a frontispiece in colour.

The Medical Journal of Australia

SATURDAY, DECEMBER 17, 1932.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

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CANCER OF THE STOMACH AND PEPTIC ULCER.

THE relationship between cancer of the stomach and peptic ulcer may be discussed from two points of view, the academic or pathological and the clinical. At the same time the existence of any relationship between the two conditions can be determined only by the pathological findings. The subject is an old one. In 1840 Rokitsky stated that cancer might develop from gastric ulcer. Dittrich in 1848 and Lebert in 1878 gave statistical data to prove a relationship, and Zenker (1882) is stated by Ewing to have gone so far as to conclude that all gastric cancers are secondary to some form of ulceration. In a recent thesis W. D. Newcomb¹ states that Zenker's opinion has been exaggerated by many later writers. He quotes the original report of Zenker's remarks: "... aus dem klinischen Verlaufe vieler, ja der meisten Fälle von Magen-carcinom auf ein vorhergegangenes Magengeschwür zu schliessen sei." He states, and he is quite right, that it is difficult to understand how "meisten Fälle" has been translated as "all" or "100%". Ewing, in his "Neoplastic Diseases", has an interesting discussion on the subject. He refers to the statement of Wilson and MacCarthy, of the Mayo Clinic, that

68% of the gastric ulcers seen by them were associated with carcinoma, and adds that they secured this high proportion by interpreting as carcinomatous many appearances which could with difficulty be separated from chronic inflammatory overgrowth and heterotopia of gland tissue. Ewing believes that the higher estimates, those above 2% or 3%, indicate too high an average for the carcinomatous transformation of ulcers: "Where definite carcinomatous alveoli are present throughout the base of an ulcer, especially if early, the condition is probably better regarded as primary carcinoma".

In his communication Newcomb deals with 249 peptic ulcers and 100 carcinomata of the intestine. He believes that the wide diversity of opinion in regard to the ætiological relationship between peptic ulceration and gastric carcinoma has arisen from a lack of definite histological criteria for the diagnosis of ulcer-cancer. There must be definite evidence of cancer and of preexisting ulcer before a diagnosis of ulcer-cancer can be made. Newcomb gives four criteria for the diagnosis of preexisting simple ulcer; he states that simple ulcer has the following distinguishing characteristics: (a) complete destruction of an area of muscle corresponding in size roughly to the floor of the ulcer; (b) the presence of a large area of dense fibrous and granulation tissue in the floor of the lesion; (c) the presence of *endarteritis obliterans* or thrombophlebitis in the vessels around; (d) fusion or close approximation of the *muscularis mucosæ* and *muscularis* at the margin of the ulcer. As evidence of the malignancy of a gastric tumour Newcomb places first the presence of metastatic deposits; in most cases dissemination has not occurred when the specimen comes under examination. He therefore suggests that the following points should be considered: atypical arrangement of cells, variation in size or shape of cells, variation in nuclei, a large number of mitotic figures—in other words, the commonly accepted criteria of malignancy. He, like Ewing, is emphatic that heterotopic epithelium is not carcinoma, and he points out how different his conclusions would have been had he mistaken heterotopic epithelium for cancer. He insists that the only definite evidence of preexisting peptic ulcer

¹ The British Journal of Surgery, October, 1932.

not given occasionally by primary carcinoma is fusion of the *muscularis mucosæ* and the *muscularis* at the edge of the ulcer. He suggests that this criterion, first put forward by Professor H. M. Turnbull, is as valuable as the demonstration of tubercle bacilli in the diagnosis of tuberculosis. When he applied these criteria to his series of specimens, Newcomb found that 3.75% showed malignant change and that 13% of the cancers showed evidence of previous peptic ulceration.

Though Newcomb's figures do not differ materially from those of many of the later investigators, his communication, the details of which cannot be set out here, is important and should be studied by both physicians and surgeons. There is no doubt that malignant change can and does supervene on chronic ulceration of the stomach. We are still ignorant of the causes of both ulcer and malignant disease. It is not likely that they have a common cause. If, however, there is such a thing as a cancerous diathesis, who is to say that the influences which permit ulceration of the stomach to occur do not, in a person predisposed to cancer, make the damaged gastric tissues liable to take on malignant growth? Pages might be covered with surmises as to how or why these changes occur, but a more useful purpose will be served by turning to the clinical aspect. Here emphasis must be laid on the need for adequate treatment of ulcer and for the more frequent adoption of surgical measures when peptic ulcer does not give a good response to treatment. The removal of a premalignant ulcer will not remove the conditions which have allowed the ulcer to occur, but it will obviate the later occurrence of cancer in chronically damaged tissues.

Current Comment.

ADDISON'S DISEASE.

MELASMA SUPRARENALÉ, first described by Thomas Addison in 1855, generally occurs in early adult or middle age, but young children and the elderly are not exempt. It is often associated with pulmonary or other tuberculous disorder or follows inflammatory lesions in areas adjacent to the adrenals, such as caries of the dorsal or lumbar spine. It may arise after injury to the back or loins. Conybeare and Mills found fibrocaceous tuber-

culosis of the suprarenals in 76% of cases and simple atrophy in 24%. In the former group tuberculous lesions were found elsewhere in all but four of 22 cases. In the atrophic group (seven) no tuberculous lesions were found, except old scars in the lungs in two. Byrom Bramwell has suggested that it might be possible to distinguish by X ray examination caseous changes in the adrenals from simple atrophy. Such caseous nodules show up clearly in the lung, but the abdominal structures would not afford the same contrast. In some cases calcareous degeneration occurs. Several investigators have found shadows in the suprarenal areas on X ray examination, and autopsy subsequently disclosed caseous suprarenal glands. For the purpose of treatment it is important to distinguish between Addison's disease caused by tuberculous affection and that associated with simple atrophy or fibrosis of the adrenals. The course of the disease varies. There may be remissions and exacerbations, but after each aggravation the patient is left permanently worse. The duration may be a few months up to six or seven years or more. In the series of Conybeare and Mills the average duration in the tuberculous group was a little over four months. Not one lived over two years. In the other group one patient had symptoms for ten years. Probably symptoms are not evident until the glands are largely destroyed, hence the absence of symptoms of Addison's disease in adrenal neoplasms.

There is an increasing tendency to assign the manifestations of Addison's disease to involvement of the adrenal cortex rather than of the medulla. Some regard the medulla as of little or no importance. It is believed that symptoms of Addison's disease arise only when most of the cortex is destroyed and occur even if the medulla and chromaffin system are normal. If the cortex be normal and the chromaffin system be almost absent, the symptoms of Addison's disease do not arise.

Theodore Thompson and B. F. Russell report recovery from a severe Addisonian crisis, with good health a year later.¹ An Addisonian crisis is of the greatest gravity and most patients succumb to the extreme fall of blood pressure, dehydration and fall in blood volume. Temporary improvement has been noted from intravenous administration of glucose-saline solution with adrenaline pushed hypodermically; but relapses are frequent. The isolation by W. W. Swingle and J. J. Piffner of a substance which indefinitely prolongs the lives of cats from which the adrenals have been removed, has been asserted to make the prognosis in Addisonian crisis comparable with that of insulin in diabetic coma. Glucose-saline solution is valuable as an adjuvant in combating the severe shock-like condition. The patient of Thompson and Russell was an emaciated female, aged forty-three years. Pigmentation was most marked in exposed parts and in parts pressed on by the clothing. The buccal mucosa and tongue were also affected. The systolic blood pressure was 92 and the diastolic pressure 55 millimetres of

¹ *The Lancet*, July 23, 1932.

mercury. There was no family history of tuberculosis nor evidence of pulmonary tuberculosis. A radiogram of the chest revealed a few calcified nodules. There was no evidence of calcification of the adrenals. The patient probably had suprarenal atrophy, but tuberculosis could not be absolutely excluded. The systolic blood pressure fell to 65 and the diastolic pressure to 45 millimetres of mercury, and vomiting set in. Temporary amelioration followed the use of glucose-saline solution and adrenaline. Later the patient became semiconscious and death seemed imminent. Cortical extract (encortone) was given intravenously with glucose-saline solution, and administration was continued subcutaneously with diminishing doses for some months. Improvement was rapid. The blood pressure rose, pigmentation faded, appetite and weight increased, and menstruation returned. Blood pressure, however, did not regain the normal level and the last record was 85 millimetres of mercury, systolic, and 50, diastolic. Blood sugar remained low throughout. The patient was able to do shopping and housework without undue fatigue. The ultimate prognosis cannot be stated, in view of the fact that temporary remissions are characteristic of the disease. Probably the outlook when treatment is made with cortical extract is better when the disease is due to adrenal atrophy than when it is tuberculous.

W. Broadbent¹ reports a case of a woman, aged fifty-five. She was thin, weak and short of breath, and had oedematous crepitations at both lung bases. The systolic blood pressure was 90 and the diastolic 60 millimetres of mercury. Pigmentation was present. She was given tuberculin (B.E.) injections, slowly increased, with adrenaline by mouth. Improvement was gradual, and after five months' treatment the patient could stay up all day and walk a mile. Weight had been gained and pigmentation almost disappeared. The systolic blood pressure rose to 110 and the diastolic to 90 millimetres of mercury.

These two cases illustrate the different types of Addison's disease. The second was doubtless tuberculous, hence the improvement with tuberculin treatment. The oral administration of adrenaline could not possibly have had any effect. As regards extract of adrenal cortex, there are several preparations in use. Inter-renalin is one, so called from the fact that the adrenal cortex corresponds to the inter-renal gland of fishes. The administration of Swingle's extract has certainly been followed by improvement; but in the present state of knowledge it is unwarranted optimism to compare it with insulin in diabetes. It must not be forgotten that the manifestations in dogs whose adrenals have been removed are not identical with those of Addison's disease. Substitution therapy of adrenal cortex is more applicable to animals than to human beings suffering from Addison's disease. In treatment some workers prefer whole gland to the cortex alone. Much more investigation

is imperative before we can definitely assign curative or palliative properties to adrenal cortex in Addison's disease. It has been suggested that when only one adrenal gland is affected surgical removal may be undertaken with success. Another suggestion has been to graft a foetal suprarenal gland into the testicle or kidney. Reported cases have failed and the risk of operation is great. There is no evidence that a homologous suprarenal graft is viable, and it is doubtful whether efforts at grafting can be justified. Some investigators believe that some adrenaline is formed in the cortex.

SMALLPOX.

LEDINGHAM has devised a method of preparing a pure suspension of the so-called Paschen bodies or elementary bodies obtained from lesions of vaccinia. He has infected laboratory animals with vaccinia virus and has studied the development of substances capable of agglutinating Paschen bodies in suspension. Ledingham's work opens up a new avenue for research. There are many important features of vaccinia and variola that have never been explained; not the least of these are the relationship between the two diseases and the manner in which vaccination protects against smallpox. It is possible that Ledingham's work may be the means of gaining much information on these points. Recently C. Russell Amies has made a study of the agglutination of variola elementary bodies by sera of persons suffering from variola.¹ Laboratory animals were inoculated with material from the lesions of persons suffering from severe smallpox in Calcutta and persons suffering from alastrim in England. From the lesions produced in the laboratory animals the suspensions of elementary cell bodies were prepared by a process consisting of repeated centrifugation in changes of distilled water. Both Indian and English strains of Paschen bodies were agglutinated by a known antivariola monkey serum. Four of ten samples of serum obtained from patients suffering from smallpox in Calcutta agglutinated suspensions of both English and Indian variola elementary bodies. In 22 of 28 cases, serum from persons suffering from alastrim in England agglutinated Indian variola elementary bodies. In eight of thirteen cases, serum of persons suffering from alastrim agglutinated alastrim elementary bodies.

It is of interest to note that when a serum failed to agglutinate elementary bodies of one strain it also failed to agglutinate those of the other strain. No serum, either Indian or English, agglutinated elementary bodies obtained from lesions of vaccinia. It would be of interest to ascertain whether variola elementary bodies are agglutinated by serum of vaccinated persons who have not been in contact with variolous material. If these agglutination reactions are specific, they may be of considerable clinical importance. Much work must be done before an estimation of their value can be made.

¹ *The Lancet*, July 23, 1932.

¹ *The Lancet*, September 10, 1932.

Abstracts from Current Medical Literature.

OPHTHALMOLOGY.

Pupillotonia.

W. J. ADIE (*British Journal of Ophthalmology*, August, 1932) reviews the present knowledge of the abnormal behaviour of the pupil variously described as myotonic reaction, tonic convergence reaction of pupils apparently reactive to light, non-luetic Argyll Robertson pupil, pseudo-Argyll Robertson pupil, and other names. The complete form is characterized by the tonic convergence reaction in a pupil apparently inactive to light and by the absence or diminution of one or more of the tendon reflexes. In incomplete forms there may be tonic pupils alone, or absent tendon reflexes alone, and various atypical forms. Saenger and Strasburger first described the condition independently in 1902, and Behr reported eight cases in 1921. The cases reported in 1924 for Foster Moore under the title "non-luetic Argyll Robertson pupil" were evidently examples of pupillotonia. In a typical case the tonic pupil is unilateral and larger than its fellow. The reaction to light, direct and consensual, is completely or almost completely absent. After a sojourn in a dark room for an hour the pupils usually dilate to an equal size; on returning to bright light the abnormal pupil contracts slowly to a size smaller than its original condition. The essential diagnostic feature is its behaviour to convergence. Looking at a near object, after some delay it contracts slowly, often down to pin-head size, so that it is smaller than the other pupil. On relaxation the dilatation is even slower than the contraction. The tonic pupil dilates well to mydriatics and contracts under exercise. It is unilateral in about five to one. A large proportion of the patients are healthy young women; the eye signs they present are not observed in known syphilitics. Tendon areflexia is not accompanied by other signs of organic nervous disease. The Argyll Robertson pupil is small, usually bilateral, constant in size and unaltered by light or shade; it contracts promptly on convergence and dilates promptly when convergence ceases. It dilates badly with mydriatics. The tonic pupil is not a manifestation of syphilis. The most frequent extraocular sign is diminution or loss of the ankle jerk. This always precedes the loss of other tendon reflexes. The pathology is unknown, but the condition runs a benign course and is compatible with long life.

The Treatment of Uveitis.

W. L. BENEDICT AND W. H. GOECKERMAN (*Archives of Ophthalmology*, August, 1932) describe some of the measures employed at the Mayo Clinic for chronic uveal infection. Tuberculin must be used with caution,

as unfavourable reactions occur and dormant tubercles are excited, with resultant spread of local injury. Anti-syphilitic treatment is used if serological tests give positive results. In acute uveitis the most effective form of treatment is foreign protein. Milk may be taken as a standard from which to judge the effect of other protein substances. From six to ten cubic centimetres are injected into the gluteal muscles, and a second injection is given twenty-four hours after subsidence of temperature. The maximal effect is obtained after four or five injections. In low grade forms extending into the second month, milk is not effective, and typhoid vaccine, injected intravenously, is employed. In more chronic forms still they give intravenous injections of sodium gold thiosulphate in doses of from ten to one hundred milligrammes. The average dose is 25 to 50 milligrammes. One hundred injections may be given; less than 25 have not proved of much value. At intervals of several months a course may be repeated. The patient should be watched for hypersensitivity.

Post-Operative Care of the Eyes Without Bandages.

E. B. RABKIN (*Archives of Ophthalmology*, June, 1932) states that ocular bandages have undergone a considerable evolution and the tendency is for the dressings to become thinner and thinner. In some clinics the dressings are light enough to permit air and light to penetrate readily. Clinical observation has shown that the use of bandages is not essential for a favourable outcome; often the post-operative period is shortened when dressings are not used. Their absence creates unfavourable conditions for the development of anaerobic bacteria, secretion is decreased, there are fewer post-operative complications, and the patients are more comfortable. The blinking, the washing of the eye with tears, which has a bactericidal quality, and the quick closure of the wound influence favourably and shorten the period of healing. Bandages act contrary to this aim. The author refers to Professor Hirschmann's clinic in Kharkow. No complications occurred because of the use of the open method in any of the 127 cases observed. The operations included 47 cataract extractions and 64 iridectomies.

Vernal Conjunctivitis.

L. LEHRFELD (*Archives of Ophthalmology*, September, 1932) makes some observations on vernal conjunctivitis, based on 87 cases occurring at the Wills Hospital from 1929 to 1931. It is probably more common than is supposed, as many cases of the limbic form have escaped attention and many of the follicular lid variety have been regarded as simple follicular conjunctivitis. The two forms may be separate diseases, though caused by the same excitants, for not a single case of the limbic form was accompanied by the characteristic cobblestone changes of the lid. The chronic lid types may persist during the winter months, but the limbic form always disappears in

the autumn. The disease is most likely an ocular manifestation of an allergy, due principally to street dusts and pollens, beginning in spring or early summer, characterized by itching, redness of the eyes, lachrymation and lardaceous discharge. There is either hyperplasia of the lid follicles, especially of the upper lid, or a vesicular eruption, discrete or confluent, at the limbus. Of the 87 patients, 72% were males and 28% females; 53% of the infections were of the lid type, and 47% limbic; 39% of patients were under ten years of age, 22% were between 11 and 20, 12% between 21 and 30, and 6% between 31 and 40. The limbic type is not so troublesome as the lid form and has fewer recurrences. The palpebral form, extending over a period of years, may produce the typical cobblestones with a milky film appearance and discharge. Bacteria find lodging places in the new crypts, and in this way a secondary bacterial allergy may develop. In advanced lid cases the discharge is characteristic. The thick, ropy, lardaceous discharge may be peeled off without bleeding from the conjunctival surface of the upper lid or by massage of the closed lid; it may be displaced to the inner canthus, whence it may be removed in one lump. The itching may be extremely severe, without marked lesions. This intense itching, presence of eosinophilia, the immunity of the cornea, the regular summer return of the symptoms, and the typical discharge of mucus differentiate vernal catarrh from trachoma. In treatment of this condition radium has been useful, but has only a limited value. As a simple and effective remedy for the relief of symptoms, the author practises the removal of the "chewing gum" mucus from the lids, ordering lightly tinted glasses as a wind-screen, and especially frequent washing out of the eye with a watery lotion. He decided to use cold boric acid solution and instructed his patients to bathe the eyes seven times a day.

OTO-RHINO-LARYNGOLOGY.

Chronic Progressive Deafness.

J. K. M. DICKIE (*Archives of Otolaryngology*, June, 1932), in a summary of the bibliographic material available in the field of oto-laryngology dealing with chronic progressive deafness, including otosclerosis and diseases of the inner ear, states that according to Richer, acute infectious rhinitis is the commonest cause of tubal closure and otitis media. Vasomotor rhinitis, a deviated septum and ozæna have little to do with the causation of otitis media. Inflammation or infection of the paranasal sinuses, on the other hand, is a fruitful source of aural infections. An unusual case was reported by Soderberg. The case was one of absence of vestibular function with normal hearing, which the author believed to be unique, as he could find no record of any similar

condition. Losanov studied the question of professional deafness in the nail factory at Saratov. The workers are subjected to continuous deafening noises from the stamping machines for many hours a day. His conclusions agree substantially with the observations of other workers in the same field, in that continuous loud noises affect mainly the cochlea. The perception of combined sounds is more affected than that of elementary sounds. Long rest from work produces hardly any improvement. Cotton wool plugs do not protect the ear from such injury. Disease of the nasal accessory sinuses aggravates the condition. Shambaugh states that meningitis is the commonest cause of acquired deafness, with measles second and scarlet fever and influenza next. Syphilis is not an important factor. Neuritis of the auditory nerve is usually responsible for extreme deafness following scarlet fever and measles. Many patients had no *otitis media*, and even in those who had that disease neuritis was more probably the cause than labyrinthitis, as the patients who had some vestige of hearing numbered more than twice as many as those who were totally deaf. Davis divided cases of aural injury due to fracture of the skull into three groups, according to the degree of severity. The first group consists of hemorrhage into the middle ear only, without rupture of the drum. The membrane is bluish and there is a typical middle ear deafness. The lesion is probably a crack in the tegmen. The second group shows a rupture of the membrane with bleeding from the meatus. The rupture is generally in Shrapnell's membrane. The roof of the middle ear may be comminuted, and the spicules of bone may be seen in the meatus. The third group consists of severe fractures involving the labyrinth capsule with escape of cerebro-spinal fluid. These cases are usually fatal. Most of Davis's cases were of the middle ear type. If there is any improvement, it usually occurs within eight weeks. Any deafness after that period is permanent. Davis had not seen any cases of genuine inner ear deafness resulting from fracture. Probably most of these patients die.

Anatomy and Physiology of the Ear.

PHILIP E. MELTZER (*Archives of Otolaryngology*, May, 1932) presents a review of the literature on the anatomy and physiology of the ear from October, 1930, to October, 1931. He states that encouraging reports and experimental data are being constantly gathered on the vasomotor influence on the functions of the ear. He thinks that otologists are approaching, though not rapidly, insight into the symptom complex known as Ménière's disease. According to Alexander, in the normal human ear the Eustachian tube is closed during rest; there is thus no influence on both sides of the tympanic membrane, which would result only in a slight movement. Thus, too, a disturbing autophony is

obviated, and the tympanic membrane is unaffected by the respiratory movements. In the normal human ear the aerocochlear route is important for the conduction of the higher, but not for the remaining tones. The knowledge of sound direction, that is, orientation by means of sound, is dependent on the ossiculo-cochlear conduction of sound, but analysis of this sensation is ultimately a cerebral function. Ossiculo-cochlear conduction and aerocochlear conduction act together in the human ear, the former being most active in normal ears when the tube is closed. Under pathological conditions, especially when the tympanic membrane, ossicular chain, or both, are destroyed, the aerocochlear route is the principal route. It is only for the lower tones, up to about 90 double vibrations, that the ossiculo-cochlear route is absolutely necessary. When the tube is open, or, in the normal ear, at least at the moment of opening, the lower tones, with the exception of the very lowest, are conducted by the aerocochlear route. The two windows can both act as receptors of sound or corresponding resilience agents, but not simultaneously. Pathological closure of both windows, even if the cochlea is intact, leads to a marked loss of hearing, while if the cochlea also is only slightly diseased, absolute deafness results. Friedmann stated that the fundamental difference between his new theory of sound perception and the generally accepted theory of Helmholtz is that he ascribed the main rôle in the conduction of sound toward the ends of the auditory nerves to the molecules of the hidden gases that are dissolved in the labyrinthine fluid of the cochlea and that are present in the other tissues (bones and blood) on the track to the labyrinth. He considered *tinnitus aurium* the result of a disturbance in the equilibrium between the molecules of gas in the blood and those in the tissues. Adlersberg and Forschner studied the effect of forced respiration (hyperventilation) to determine the influence of changes of the acid-base equilibrium on the excitability of the vestibular apparatus. De Kleyn and Schenk proved that the reflex arc for vestibular nystagmus in man, as in animals, consists of the peripheral labyrinth, vestibular nerve, vestibular nucleus, *abducens* nucleus, *abducens* nerve and external rectus muscle.

Chronic Frontal Sinusitis.

J. VAN DER HOLVEN LEONHARD (*The Journal of Laryngology and Otology*, June, 1932) gives the results of his investigations into cases of chronic frontal sinus suppurations and discusses the part played by the anatomical configuration of the frontal sinus in determining the cause. The author has made a thorough examination of a great number of specimens and he classifies the sinuses into four categories, according to the number and type of divisions, pockets *et cetera* found in these specimens. He concludes that suppurations tend to persist when the sinuses are

large, and this fact is confirmed by radiographic examination of his patients. A close examination demonstrates that sinuses with a transverse diameter of less than three centimetres are very rarely subject to a chronic inflammation, that the larger sinuses are more subject to this inflammation, and that the right sinus is more often involved than the sinus on the left side, owing to anatomical causes which are given in detail.

Pathological Conditions of the Larynx.

EDWARD F. ZIEGELMAN (*The Western Journal of Surgery, Obstetrics and Gynecology*, September, 1932), in a paper illustrated by photomicrographs, dealing with the aetiology of malignant disease of the larynx and its relation to pathological conditions of the larynx, concludes that acute laryngitis and its resulting sequela, chronic laryngitis, in a great percentage of cases is due to infection in the nose and nasal accessory sinuses. One of the great protections against the development of such pathological change is the early and persistent treatment of the nasal and paranasal sinus lesions. All cases of chronic laryngitis with voice changes call for careful observation and biopsy study to determine early malignant changes. One non-malignant section of biopsy material does not exclude cancer; age and the presence of syphilis or tuberculosis do not exclude it. The larynx is one of the most satisfactory organs to treat for malignant disease, as far as a permanent result is concerned. To use the direct laryngoscope more and to philosophize less is a good rule to follow in arriving at an early diagnosis of cancer of the larynx. Electro-surgery, thyrotoomy and laryngectomy all have their place in the treatment, the place of each depending upon the progress of the disease.

Sinusitis in Chronic Arthritis.

R. G. SNYDER, S. FINEMAN AND CORNELIUS TRAEGER (*The Laryngoscope*, September, 1932) present a report of a five-year period of study of 386 cases of chronic arthritis, in each of which a stereoscopic radiographic examination of the nasal sinuses was carried out. Clinical observation of patients with chronic arthritis in whom sinus disease was discovered and treated, has convinced the writers of a close relationship between these two diseases in many of their cases. Unrecognized extensive "silent" sinus infection may exist in a patient suffering from chronic arthritis; and all efforts to cure the patients may be useless until the sinus infection is treated or eradicated. Routine radiological examination of the nasal accessory sinuses of all chronic arthritis patients will disclose many cases of sinus disease which might otherwise escape detection. Rhinological treatment of diseased sinuses has in many instances aided materially in the clinical cure of chronic arthritis. No case was observed in which competent and careful rhinological treatment caused any ill effect upon the patient's arthritis.

British Medical Association News.

SCIENTIFIC.

A MEETING OF THE VICTORIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at Saint Vincent's Hospital, Melbourne, on August 17, 1932. The meeting took the form of a series of demonstrations by the members of the honorary staff.

Hæmochromatosis.

DR. H. CONSIDINE showed for Dr. J. W. GRIEVE a male patient, aged sixty-eight years, who was suffering from hæmochromatosis. The history was one of loss of weight, of strength and of energy for the past twelve months. His weight had been 91.3 kilograms (fourteen stone seven pounds), and at the time of demonstration was 63 kilograms (ten stone). Ten months before he had suffered from polyuria, frequency of micturition and great thirst.

He attended Saint Vincent's Hospital, where definite skin changes were observed, sugar was found in the urine and a gross enlargement of the liver was detected. His systolic blood pressure was 170 and his diastolic pressure 90 millimetres of mercury.

He was given a diet of 30 calories per kilogram for his ideal weight (nine complete line rations) and his urine remained sugar-free. He was still losing weight—3.1 kilograms (seven pounds) in the past four months.

On March 24 his fasting blood sugar was 0.198%. When his blood was subjected to the Wassermann test there was a slight partial response to the Bordet and no response to other methods. X ray examination confirmed the enlargement of the liver, but otherwise revealed no abnormality.

His previous history showed that ten years before he had been told he had an enlarged liver. There was also an alcoholic history for thirty-five years. There was no special reason for suspecting copper as a causative factor.

Subacute Combined Degeneration of the Cord.

DR. W. J. NEWING showed two patients who were suffering from subacute combined degeneration of the cord. Both were women aged about fifty, and in both the anaemia was in remission, with blood counts approximating normal. Neither could walk without assistance, but, instead of the usual spastic condition of the deep reflexes, in both the ankle jerks were absent; the knee jerks were absent in one patient and very sluggish in the other. Six months previously, during an exacerbation of the anaemia, these also had been absent, but had returned with the onset of remission, under vigorous treatment. The plantar reflexes were extensor in both cases. The patient with persistently absent knee jerks had deep muscle tenderness, trophic changes in the toes, and relative superficial analgesia resembling a peripheral neuritis. This woman's sister had died of pernicious anaemia. It was doubtful whether there had been any improvement in the ataxia under treatment.

DR. J. G. HAYDEN showed a male patient, aged fifty-six years, who, two years previously, had complained of progressive loss of 12.6 kilograms (two stone) in weight, sore tongue, and a feeling of constriction in the chest on exertion. Six months later he complained of numbness and tingling in both hands and in the right foot. Three months later he complained of increasing constipation. He was examined on July 7, 1931. His tongue was fissured. Vibration sense was absent from both legs and there was some clumsiness in working the fingers. The blood count was abnormal. The red cells numbered 2,300,000 per cubic millimetre, the leucocytes numbered 6,000 per cubic millimetre, the hæmoglobin value was 52%, and the colour index was 1.1. The film showed anisocytosis with some degree of poikilocytosis.

The patient was treated with whole liver and liver extract and gained 9.4 kilograms (one and a half stone) in weight. His blood count returned to normal.

Six months later he looked a ruddy, well nourished individual, but complained of pains in his knees and shooting pains in the legs. These symptoms progressed,

and in addition the patient became very ataxic and could not walk without assistance. In the six weeks before the meeting his bowels had become very costive and he could pass his urine only about every twelve hours.

Examination at the time of the meeting showed evidence of a spastic ataxic gait with increased knee jerks and bilateral Babinski's signs. There was gross loss of posterior column sensation in the legs and some diminution of sense of position in the left arm. The superficial abdominal reflexes were active. The Wassermann test applied to both blood and cerebro-spinal fluid gave no reaction. X ray examination of the spine showed evidence of osteoarthritis.

Dr. Hayden instanced this case as one of pernicious anaemia, in which, despite treatment and loss of symptoms, the patient ultimately developed subacute combined degeneration of the cord. This late development of nervous symptoms, despite general improvement, detracted from the favourable prognosis of pernicious anaemia. The onset with loss of weight was not uncommon in many cases of this disease. The early symptoms of precordial constriction and pain were frequent in severe anæmic states, and Dr. Hayden stated that he had seen three cases of pernicious anaemia in which angina was the presenting symptom. Constipation, in his experience, was also very common and more frequent than diarrhoea, which was often described as a symptom. The arthritic pains were the most intractable symptom in many cases. The preservation of superficial abdominal reflexes, despite gross pyramidal disease, was also a common finding.

Bronchiectasis and Arthritis.

DR. W. J. NEWING showed a woman with a cavity in the upper lobe of the right lung and generalized infective arthritis. She had a hæmoptysis twelve years previously and had been treated for eighteen months for tuberculosis. She had no illness referable to her lung since, and her general condition was good. No tubercle bacilli had ever been found in the sputum. It was questionable whether the cavity had ever been tuberculous; it was probably bronchiectatic.

Dr. Newing showed the patient with the suggestion that the cavity was the focus from which the arthritis arose.

Primary Basal Tuberculosis.

DR. FRANK NIALl showed a girl, aged twenty-one years, a tailor's apprentice, who reported at Saint Vincent's Hospital on December 1, 1931, complaining of cough for four months with a moderate quantity of yellow sputum, but no blood. She said she was working at her job and she was gaining weight. The appetite was good, digestion was normal and the menses were regular. Five months ago she had an attack of pleurisy with effusion. She then ran a temperature up to 40° C. (104° F.) and was in bed for some weeks. She had had no other illnesses and the family history was good.

On examination she was pale, but in moderately good condition. At the right base posteriorly there was diminished vesicular murmur with showers of crepitations and crepitant râles and some diminished vesicular resonance. There were no other physical signs. On X ray examination marked mottling was found at the right base and there was also a circumscribed area which showed a fluid level. The sputum was loaded with tubercle bacilli.

Towards the end of December pneumothorax treatment was commenced. On January 26 she said she had no cough and was gaining weight. Pneumothorax had been continued since and her progress had been remarkably good. She felt perfectly well, had gained in weight 18 kilograms (two stone twelve pounds) and had had practically no cough or sputum.

Dr. Niall said that the points of interest in this case were: (i) Apart from the recent pleurisy with effusion, the symptoms did not suggest an active lesion. (ii) The situation of the lesion (being a primary basal tuberculosis) was uncommon. (iii) The response to the artificial pneumothorax had been excellent.

Pulmonary Fibrosis.

Dr. Niall's second patient was a woman, aged fifty-six years, who was first seen on July 22, 1932, complaining of

a severe cold with a troublesome cough for two weeks. She also complained of aching pains in the left side of the chest, arm, shoulder *et cetera*. Apart from some indigestion there were no other symptoms.

When aged twenty-seven years she had "double pneumonia". She thought it was about two years later that she began to get attacks of hæmoptysis, but at very long intervals. The last hæmoptysis was seven months ago. Ten years ago she was admitted to Greenvale Sanatorium. About six or seven years ago she was treated at another metropolitan hospital and she said that she was regarded as being tuberculous. One year ago her condition was investigated in Sydney and she said that X ray examination showed no signs of tuberculosis, but an enlarged heart. The sputum was "negative" and, as far as the patient knew, had never been positive. The Wassermann test yielded no reaction.

On examination the patient was fat and florid. The apex beat was in the fourth space, ten centimetres (four inches) from the middle line, and the sounds were normal. The arteries showed no gross sclerosis, but the systolic blood pressure was 180 and the diastolic pressure 120 millimetres of mercury. In the right lung there were numerous crepitant râles and rhonchi posteriorly, chiefly at the base. At the left base there were similar but less extensive signs. The sputum, though abundant, was again "negative", and the X ray appearances suggested merely a basal fibrosis. It was intended to investigate the bronchial tree with lipiodol.

Dr. Niall said that the case was of interest as an example of a condition which was frequently regarded as tuberculous, in spite of the consistent absence of tubercle bacilli. Presumably the increased blood pressure had not been an important factor in causing hæmoptysis.

Bronchial Carcinoma.

Dr. Niall's third patient was a man, aged fifty-two years, who was first seen on January 25, 1932, complaining of cough with yellow sputum for three months. There had been dyspnoea on ordinary walking, and on three occasions slight hæmoptysis. The appetite had been poor, he had lost 3.1 kilograms (seven pounds) in weight and had had night sweats. The past history and family history were unimportant. His work for the past three years had involved working with acetone and amyl acetate.

On examination in January, 1932, he showed pallor, slight clubbing of the fingers and marked dullness in the right infraclavicular region, with diminished vesicular murmur and showers of crepitations. The sputum contained no tubercle bacilli.

On X ray examination the postero-anterior view showed marked involvement of the right lobe, the pathological area having a sharp lower border. The lateral view showed that the condition was limited to the right upper lobe. Lipiodol failed to enter this lobe. Examination of the blood showed a secondary anaemia with 4,200,000 erythrocytes per cubic millimetre, a hæmoglobin value of 63%, and 14,500 leucocytes per cubic millimetre. Bronchoscopic examination had failed to reveal a foreign body, and no tumour was seen.

In March he was admitted to hospital and improved in general condition, but X ray examination revealed marked spread to the lower lobe and cavitation in the upper lobe. The Wassermann test had given no reaction, as also the tests for hydatid disease.

In spite of this temporary improvement, which was attributed to relief of secondary infection, the only likely diagnosis was bronchial carcinoma, particularly in view of the rather typical X ray appearances.

Dr. J. G. HAYDEN showed a male patient, aged forty-five years, a fireman by occupation, who dated the onset of his illness to an attack of influenza in January, 1932. Subsequent to that date he developed: (i) chronic, dry, irritating cough, (ii) loss of strength and of energy, (iii) some dyspnoea, (iv) loss of 6.3 kilograms (one stone) in weight.

On two occasions in the past two months he had had febrile illnesses associated with acute bronchopneumonic signs throughout both lungs. On examination the upper part of the chest on the right side was flattened and

bronchial breathing and increased vocal resonance were present. Numerous râles were present over this area on many occasions. X ray examination revealed a dense shadow in the upper part of the chest on the right side, limited by the interlobar fissure with the concavity caudally. The trachea was over to the right. Several sputum tests failed to reveal tubercle bacilli. Culture for tubercle bacilli on Hohn's media was without result. A Wassermann test gave no reaction with three antigens. Lipiodol would not enter the upper lobe bronchus, but entered the lower lobe bronchus.

Dr. Hayden said that he regarded this patient as having a small carcinoma of the upper lobe bronchus on the right side with obstruction to the bronchus and collapse of the right upper lobe of the lung as shown by the concave interlobar septum. The main disease from which this condition had to be differentiated was tuberculosis. Dr. Hayden considered that an inflammatory disease with so big an area involved would almost certainly have evidence of extension to the lower lobe or of signs in the other lung. Among the special tests of tuberculosis Dr. Hayden regarded culture on Hohn's media as being particularly useful and almost as reliable as guinea-pig inoculation. Growth occurred in eleven days to three weeks, and was often moderately profuse in specimens in which the most careful searching had failed to find tubercle bacilli. The inflammatory signs in this patient were due to bronchiectasis occurring behind the stenosed bronchus, with some spread to the lower lobe of the opposite side by direct drainage.

Dr. Hayden stated that he had seen the *post mortem* examination of three patients in the past year who died of pulmonary suppuration due to an unsuspected carcinoma. In this type of carcinoma death from infection was the rule, while the carcinoma was still small.¹

Obesity.

Dr. T. A. FALCONER HEALE showed three patients illustrating the penalties of obesity.

The first patient, a woman, aged forty-seven years, attended the out-patient department of the hospital in June, 1932. She complained of "giddy turns" lasting a few seconds; these turns had occurred at irregular intervals during the past three months. On examination she was found to have obesity, *diabetes mellitus*, and essential vascular hypertension (*hyperpiesia*). She had always been stout; at the age of twenty-one years she weighed 75.6 kilograms (168 pounds); her maximum weight was 102.6 kilograms (228 pounds) in 1924. Her weight at her first attendance was 91.3 kilograms (203 pounds). Her height was 157.5 centimetres (five feet three inches) and the average weight for her height and age was 62.5 kilograms (139 pounds). The known duration of the diabetes was seven years; *pruritus vulvæ* was the main symptom at the onset. She had never been on a weighed diet, except for a few weeks in the Broken Hill Hospital in 1928, and for the past two years she had not dieted at all. The urine contained a large amount of sugar, but no ketone bodies or albumin. The heart was not definitely enlarged. The systolic blood pressure was 210 and the diastolic pressure 110 millimetres of mercury. The retinal arteries were sclerotic, but there was no retinitis. No other abnormal findings were detected on physical examination.

A weighed diet containing carbohydrate 112 grammes, protein 51 grammes, fat 40 grammes, calories 1,012, was prescribed. The urine became sugar-free within a week and had remained sugar-free since. She now felt very well. Her weight had decreased from 91.3 kilograms (203 pounds) to 82.8 kilograms (184 pounds) in eight weeks.

The family history was interesting. The father was alive, aged seventy-four years, and had never been overweight. The mother died, aged fifty-one years, from cerebral hæmorrhage; she weighed 119.7 kilograms (266 pounds) and had *diabetes mellitus*. There were two sisters and one brother alive; one sister, aged forty-three years, had *diabetes mellitus*; her greatest weight was 113.4

¹ Since the meeting a gland which became enlarged above the clavicle has been removed and sectioned, and the pathologist reported that the gland structure was practically replaced by carcinoma cells.

kilograms (252 pounds), and she now weighed 77.6 kilograms (168 pounds). The other sister, aged forty-one years, had gall-stones, she had always been stout. The brother, aged forty years, weighed 88.2 kilograms (196 pounds). Dr. Heale pointed out that obesity, *diabetes mellitus*, and essential vascular hypertension frequently showed a familial tendency.

Dr. Heale's second patient, a woman, aged fifty years, was first seen in May, 1932. She was a known diabetic and was referred to the hospital for treatment. On examination she was found to have obesity, *diabetes mellitus*, chronic cholecystitis and cholelithiasis. She had been stout for many years; her greatest weight was 113.4 kilograms (252 pounds), five years ago. Her present weight was 93.6 kilograms (208 pounds). Her height was 161.2 centimetres (five feet four and a half inches), and the average weight for her age and height was 65.7 kilograms (146 pounds). The gall-bladder disease had a known duration of ten years, and during that time she had had two operations for removal of gall-stones and drainage of the gall-bladder. Symptoms referable to the gall-bladder were still present, and there was tenderness over the gall-bladder. Eighteen months ago she developed thirst and polyuria, and sugar was found in the urine. A diet was outlined, but the patient did not adhere to it. On her admission to hospital the urine contained much sugar, but no ketone bodies or albumin. The fasting blood sugar was 0.19%. No other abnormal physical findings were detected.

A weighed diet containing carbohydrate 112 grammes, protein 51 grammes, fat 40 grammes, calories 1,012, was prescribed. The patient made no attempt to cooperate, and the urine still contained large amounts of sugar. The weight had increased to 97.2 kilograms (216 pounds).

There was a family history of obesity. The father died at the age of fifty-eight years from cancer of the stomach; he had been stout for many years prior to his death and usually weighed 113.4 kilograms (252 pounds). The mother was alive, aged seventy-four years, and had never been stout. One brother and one sister were alive, and both were overweight. There was no family history of *diabetes mellitus*.

Dr. Heale's third patient, a woman, aged fifty-eight years, had been attending the hospital for five years with essential vascular hypertension. Her greatest weight was three years ago, when she was 76.5 kilograms (170 pounds). Her height was 160 centimetres (five feet four inches), and the average weight for her age and height was 64.8 kilograms (144 pounds). She was therefore 11.7 kilograms (twenty-six pounds) overweight. A check examination in July, 1932, revealed that her weight was then 65.7 kilograms (146 pounds). During the past five years her blood pressure had ranged from 160 millimetres of mercury systolic and 100 diastolic to 210 systolic and 140 diastolic, the latest reading being 200 systolic and 120 diastolic. The cardiac apex was in the fifth interspace, 11.25 centimetres (four and a half inches) from the midline. The second aortic sound was accentuated. An electrocardiogram revealed a right bundle-branch block. There were no signs of congestive heart failure. The urine showed no albumin or sugar, and the urea concentration test gave a maximum value of 2.5%. No other abnormal physical signs were detected.

There was a family history of obesity; the mother was stout; she had been dead many years, and the cause of death could not be ascertained. A sister was alive and weighed 81.9 kilograms (182 pounds). Another sister died, aged forty-five years, from "heart failure", possibly secondary to hypertension; she was "a little stout".

Dr. Heale then discussed the disadvantages and dangers of obesity. Obesity was ugly and uncomfortable. Overweight individuals had a shortened expectation of life; the actuarial statistics of life insurance companies had demonstrated this conclusively, and all companies loaded these individuals accordingly. Obesity and *diabetes mellitus* were intimately related. Dr. Joslin stated that *diabetes mellitus* was largely the penalty of obesity and presented convincing evidence of this in an analysis of 2,000 cases of all ages and both sexes. Of the 2,000 diabetics considered, only 9% were below the standard weight zone at or prior to the onset of the diabetes, 15% were in that zone and 76% above. In diabetics over forty years of age the

incidence of overweight at or prior to the onset of the diabetes was even more striking, being 85%.

There was also a definite association between obesity and essential vascular hypertension (hyperpiesia), although many fat people had normal blood pressures. Life insurance statistics showed a strikingly high incidence of hypertension among overweight individuals. An analysis of the cause of death in a large series of cases revealed that death from degenerative diseases of the heart, arteries and kidneys was two and a quarter times commoner in the obese than in the standard weights, and three and three-fifths commoner than in the underweights. Obese individuals also had more than their fair share of cholecystitis and gall-stones.

Dr. Heale showed charts illustrating: (i) the relation of weight to the mortality rate, (ii) the relation of weight to the incidence of *diabetes mellitus*, and (iii) the relation of weight to fatal degenerative diseases of the heart, arteries and kidneys.

Dr. Heale discussed briefly the various types of obesity. He pointed out that it was difficult to assess the part played by disturbances of the endocrine organs; cases of obesity due to endocrine upsets which could be detected clinically, formed a very small percentage of all cases. Obesity definitely showed a familial incidence. There was much confusion at present regarding endogenous and exogenous obesity. The majority of authorities, however, were agreed that, whatever the background in the so-called endogenous and so-called exogenous obesity, the only reason an individual got fat was that he overate. There must be some difference in the make-up of individuals who became fat and those who remained thin, or, in other words, some factor causing the individual to overeat. What that something was remained at present unknown. Treatment of obesity was dietetic. The caloric intake should be below the energy requirements of the body. Without cooperation on the part of the patient there was no reduction. The patient must want to reduce and must have the will power to carry out the treatment. The patient must be trained in better habits of eating. Various types of diet prescriptions were illustrated. Thyroid extract had a very limited application in the treatment of obesity; its indiscriminate use was harmful.

Gastro-Colic Fistula.

DR. H. B. DEVINE showed a male patient, aged thirty-eight years, who, some time in 1924, complained of pain in the neighbourhood of the umbilicus, coming on after meals. In 1925 the patient was suddenly taken ill, with intense pain and shock, and was operated on urgently for what he was told was a perforation of a gastric ulcer. After the operation he was well for nine months. All the symptoms of gastric ulcer then recurred. He was examined by X rays and told that he had a gastric ulcer. Two years ago a gastro-enterostomy was done for this condition. He was then perfectly well until four months ago, when he was in the country and had a big meal of mushrooms. After this he became very sick and developed diarrhoea, which had been present ever since. He passed one or two motions in the day time and eight or nine at night, big watery motions. He noticed that there was a decaying smell in his breath and a bad taste in his mouth.

X ray examination showed that he had a gastro-enterostomy and that the stoma was sutured very far towards the fundus. When the meal entered the stomach, a part of it was precipitated through the stoma into the small intestine and the other part passed through the pylorus in the normal way. It was difficult to see any connexion between the stomach and the colon. As the patient's symptoms suggested quite definitely that he might have a gastro-colic fistula, he was tested in the following simple way. When the patient had an empty stomach and after his colon had been emptied by an enema, cigar smoke was insufflated through his rectum, and it immediately poured in a stream from his mouth, thus establishing without doubt the fistulous connexion between the colon and the stomach. Later this was confirmed by a barium clysm.

Dr. Devine said that the interest of this case lay, first, in the fact that a gastro-colic fistula was not very readily

demonstrated by the X ray meal, probably because the opening was small, and, second, that a jejunal ulcer, which, of course, must be the basis of the fistula, had formed quite painlessly, its first indication being in the diagnosis.

Obscure Pulmonary Condition.

Dr. Devine's second patient was a male, aged fifty-two years, with the following history. He was quite well until eight weeks ago. Then he noticed a pain in the front of his chest, radiating through to the back. On auscultation some friction was heard anteriorly. A few days after this he noticed that he completely lost his appetite, felt very sick and began to lose weight. He could scarcely walk any distance, because he had to sit down on account of dyspnoea. At first he had a cough with very little sputum. Eight days after the onset he began to spit up nummular sputum with stale blood in it. Four weeks after the onset he began to get better and the sputum became less blood-stained. An X ray examination revealed a shadow in the middle lobe close to the hilum, which looked very like a primary carcinoma of the lung.

The interest in this case lay in the diagnosis. Dr. Devine pointed out that primary carcinoma of the lung was sometimes discovered by accident, that sometimes it did not give any of the classical symptoms. It was of particular interest to the surgeon, because treatment by implantation of radon seeds directly into the lung by a thoracotomy had given encouraging results. In this particular case, while the radiograph diagnosis was strongly suggestive of primary carcinoma, the clinical diagnosis was more in favour of some innocent cause, because the patient had increased in weight, was looking much better, and had lost some of his symptoms. At present he had a good appetite and felt perfectly well.

Rheumatoid Arthritis.

Dr. FORBES MACKENZIE showed four patients who were suffering from rheumatoid arthritis. On three of these the operation of deliberate opening of bones had been done with excellent results. All three cases were of long standing, and one patient, a boy of ten, had been bed-ridden for two years. Relief of pain following very soon after operation was noted. In every case the red blood count improved after a fortnight. In one case the count was 90,000 per cubic millimetre; this was the case of the small boy. One man had a count of 100,000 and another man one of 700,000 per cubic millimetre. The fourth patient was a woman who two years previously had fractured her femur. Within a month she had completely lost all pain and was now well and active, leading a busy, useful life. This was the case that led Dr. Mackenzie to imitate the effects of fracture by breaking large openings in bone. A demonstration of the locality and size of openings made in the lower end of the femur and upper end of the tibia in all cases was given.

Dr. CHARLES LITTLEJOHN suggested the possibility of making use of bone opening in cases of pernicious anaemia, in view of the constant increase in the number of red blood cells after this procedure.

Dr. W. R. BOYD stated that the late Sir Thomas Fitzgerald in chronic bone conditions frequently drilled a number of small holes over the affected areas.

Decapsulation of the Kidney.

Dr. Mackenzie also described two cases in which renal decapsulation had been performed with complete recovery of the patients.

A lad, aged nineteen years, was ill for one month with acute nephritis, secreting less than six ounces of urine a day; the urine was solid with albumin. This patient was waterlogged and on the verge of uraemia. One kidney was decapsulated without lifting it from its bed. After six days secretion was reestablished fully and as much as 170 ounces *per diem* was passed. Operation was performed nine months ago.

A woman, aged twenty-seven years, was ill for eight days. She suffered from pyelonephritis. Her temperature was 39.7° C. (103.6° F.), her pulse rate 112 and her respiratory rate 32. Her condition resembled a typhoidal state.

The urine was loaded with pus and colon bacilli. The right kidney was decapsulated. A number of small grey abscesses were noted on the kidney surface. From these spots a pure culture of *Bacillus coli* was made. A drain tube was left in for four days. The temperature fell to normal after two days and remained normal. The patient recovered perfectly.

Dr. Mackenzie showed a kidney similar in appearance to this patient's kidney. This kidney had been removed for a similar condition. The point was stressed that a simple decapsulation without lifting the kidney from its bed was a sufficient, easier and safer procedure than nephrectomy or nephrotomy.

Dr. W. UPJOHN stated that the late Dr. William Moore was in the habit of saying that more cases of acute nephritis should come from medical to surgical wards for decapsulation.

Omentopexy.

Dr. Mackenzie showed a diagram illustrating a suggested operation for cirrhosis of the liver with ascites, a modified omentopexy. The diagram showed the gall-bladder removed and omentum tacked to the raw surface and then carried on up through the peritoneum and anchored amongst the muscles of the abdominal wall.

Dr. CHARLES LITTLEJOHN doubted if the omentum would grow to the liver.

Dr. W. UPJOHN remarked that in these cases the omentum was usually too scanty to do much with.

Cervical Rib.

Dr. F. COLAHAN showed a woman, aged fifty years, who eight months ago noticed swelling and congestion of her left hand. This was associated with severe pain over the thenar eminence and tingling in the ring and little fingers. This was followed by severe spasmodic contractions of the muscles of the hand, especially the thumb muscles, and progressive loss of power in the hand. She found herself dropping articles on attempting to lift them.

On examination it was found that there was very marked loss of power in the left hand, which also appeared colder than the right hand, and was markedly congested. There was no definite alteration in sensation and no wasting of the interosseous or hypotenar muscles. Above the left clavicle was a pulsating swelling which appeared to be a fusiform dilation of the subclavian artery. This diminished in size on deep inspiration. A cervical rib could be palpated on the left side. X ray examination revealed a bilateral cervical rib.

Dr. F. MACLURE suggested that as symptoms had only appeared at the age of fifty years, some intrathoracic condition might be causing obstruction to the subclavian artery.

Dr. Colahan regarded the case as one in which the cervical rib was articulating with the first rib ventral to the subclavian groove and running between the middle and third trunks of the brachial plexus. The aneurysm was the result of trauma due to the respiratory movements of the rib on the subclavian artery, which was also possibly being pushed forward. The late onset of symptoms might be due to overwork causing drooping of the shoulders, thus increasing the obstruction caused by the cervical rib.

Aneurysm of Common Carotid Artery.

Dr. Colahan showed a woman, aged fifty-two years, who had an aneurysm of the common carotid artery on the right side. This patient reported to hospital six months ago for treatment of a urinary infection. In the course of examination a fusiform pulsating swelling was found in the right side of the neck, just above the sternoclavicular articulation. She complained of no symptoms referable to the swelling in the neck and had not previously known of its presence.

The pulsating swelling extended across the mid-line of the neck to the left side, and was slightly tender on palpation. The Wassermann test gave no reaction. The patient suffered from hypertension, the systolic blood pressure being 220 and the diastolic pressure 110 millimetres of mercury. Examination of other systems revealed nothing abnormal.

Dr. W. UPJOHN considered that the case was possibly one of an anomalous origin of the common carotid from the left side of the aortic arch.

Dr. Colahan agreed that the condition might be an anatomical anomaly, as suggested by Dr. Upjohn, which would account for the absence of symptoms and the pulsation occurring across to the left side. He did not consider any operative interference warranted.

The Lorenz-Böhler Methods of Treatment of Fractures.

Dr. THOMAS KING demonstrated the Lorenz-Böhler methods of treatment of fractures.

A fracture of both bones in the forearm and of the humerus occurred in the same extremity. The former was reduced by skeletal traction, Kirschner wire being used through the olecranon, and at the lower end through the radius and ulna, two fingers' breadth proximal to the radial styloid, in order to escape the epiphysis. The wire remained incorporated in plaster. The brachial plexus anaesthesia was used. A cinematograph film illustrating this case was shown. The limb was then placed on an abduction splint, and extension for the humerus was obtained from the transfixid olecranon.

Two fractures of the scaphoid were demonstrated. One fracture, fourteen months old, united after five months' immobilization in a non-padded plaster cast. Neither patient was in any way prevented from working by such immobilization. One patient, suffering from a fresh fracture, continued pick-axe work next day.

In a fracture dislocation of the angle the foot was displaced upward between the tibia and fibula. The fracture was reduced after five days by Böhler's screw traction apparatus for the lower extremity. A cinematograph film of this case was shown, illustrating the method in detail.

In reply to questions as to the indications for skeletal traction, Dr. King said that it should be used only with the greatest circumspection. He enumerated the general indications and considerations:

1. It was seldom used in patients under fourteen to sixteen years of age.
2. Where there was any injury to the skin, for example, flaying by strapping.
3. In compound fractures, such as those of the tibia and fibula, no other method of traction was possible.
4. Where a poor result must follow less powerful methods of traction, for example, the oblique shaft of the femur.
5. Where open operation was the only other method of obtaining reduction, for example, both bones of the forearm.
6. In cases of vicious union, for example, fracture of the shaft of the femur; osteoclasia or osteotomy was followed by forty pounds of traction.

The special indications were as follows:

1. In fractured shafts of long bones where extension greater than seven pounds was required, the fracture being oblique, displaced, and the bone shortened, for example, fracture of the shaft of the femur. In most cases it was better to use skeletal traction for three weeks, then Unna's paste dressing was applied.
2. In comminuted fractures, particularly near joints, for example, Pott's fracture. When skeletal traction was used, the fragments fell into position; due to the pull on attached ligaments, unless there was gross rotation of the fragments.
3. In fracture dislocation, for example, of the head of the humerus. These difficult fractures could be successfully dealt with in a screw traction apparatus.
4. Difficult dislocation, for example, old, unreduced semi-lunar bone.

Flat Foot.

Dr. King showed a patient illustrating that traumatic flat foot was an inversion (pronation) contracture of the forefoot. Trophœdema following trauma (Secretan's disease) was also illustrated, and both were combated by applying an Unna's paste dressing so that the forefoot was everted and the heel inverted. The longitudinal arch was restored, while œdema and swelling causing pain with loss of function did not occur with the vicious circle of halisteresis, muscle atrophy, stiff joints and ligaments, and therefore a poor functional result.

SCHOLARSHIPS AND GRANTS IN AID OF SCIENTIFIC RESEARCH.

THE Council of the British Medical Association is prepared to receive applications for research scholarships as follows:

An Ernest Hart Memorial Scholarship, of the value of £200 per annum.

A Walter Dixon Scholarship, of the value of £200 per annum.

Three Research Scholarships, each of the value of £150 per annum.

These scholarships are given to candidates whom the Science Committee of the Association recommends as qualified to undertake research in any subject (including State medicine) relating to the causation, prevention or treatment of disease.

Each scholarship is tenable for one year, commencing on October 1, 1933. A scholar may be reappointed for not more than two additional terms. A scholar is not necessarily required to devote the whole of his or her time to the work of research, but may hold a junior appointment at a university, medical school or hospital, provided the duties of such appointment do not interfere with his or her work as a scholar.

The Council is also prepared to receive applications for grants for the assistance of research into the causation, treatment or prevention of disease. Preference will be given, other things being equal, to members of the medical profession and to applicants who propose as subjects of investigation problems directly related to practical medicine.

A copy of the regulations relative to the award of the scholarships and grants for 1933, and of the prescribed application form can be obtained on application to the Secretary of the Federal Committee of the British Medical Association in Australia, British Medical Association House, 135, Macquarie Street, Sydney. The completed application form is required to be submitted to the Secretary of the Federal Committee not later than March 4, 1933.

Applicants are required to furnish the names of three referees who are competent to speak as to their capacity for the research contemplated, to whom reference may be made.

NOMINATIONS AND ELECTIONS.

THE undermentioned have been nominated for election as members of the New South Wales Branch of the British Medical Association:

Kershaw-Hynes, Marie Eleanor, M.B., B.S., 1928 (Univ. Sydney), 10, Wandella Avenue, Roseville.

Nelson, Selwyn Graham, M.B., B.S., 1930 (Univ. Sydney), Abbott Street, Gunnedah.

Wilson, Joseph Besnard, M.B., B.S., 1929 (Univ. Sydney), 73, Belgrave Street, Manly.

Public Health.

UNEMPLOYED FOOD RELIEF RATION SCALES.

THE following statement is published at the request of the Under Secretary, Premier's Department, New South Wales.

The Honorary Minister, Mr. H. M. Hawkins, M.L.C., stated today that many cases had come under notice in which medical practitioners had furnished certificates to recipients of food relief recommending additional foods to those contained in the ration scales. The additional foods, together with the goods contained in the scale in several instances would amount to extravagance.

When the medical practitioner concerned is communicated with it is generally found that he has no conception

of the amount of food contained in the ration scale, but has accepted the word of the applicant, who frequently conveys the impression that the amount of food available to him is far below reasonable requirements. In almost every instance, when informed of the actual position, medical practitioners have stated that they are prepared to withdraw or amend their certificates.

With a view of making the position clear to medical practitioners Mr. Hawkins has furnished copies of the ration relief scales as set out hereunder.

Ration Relief Scale.

Ration A. Single Person.

Bread—loaves	3	Meat—lb.	4
Tea—oz.	4	Sugar (1A)—lb.	1
Jam—oz.	1	Condensed milk—lb.	1
(Brands: R.S.T., D.S.O., Orchard Pride, Melba, Annandale Jam Co.)		(A.M.P. brand)	
Butter—lb.	2	Soap—bar (N.S.W.)	1
(N.S.W. choicest)		Cheese—lb. (N.S.W.)	1

Ration B. Married Couple.

Bread—loaves	4	Meat—lb.	4½
Tea—oz.	6	Sugar—lb. (1A)	2
Jam—oz.	24	Condensed milk—lb.	1
(Brands: R.S.T., D.S.O., Orchard Pride, Melba, Annandale Jam Co.)		(A.M.P. brand)	
Butter—lb.	2	Butter—lb.	2
(N.S.W. choicest)		(N.S.W. choicest)	
Soap—bar (N.S.W.)	1	Milk—pints	3½
Cheese—lb. (N.S.W.)	1	Oatmeal—lb. (N.S.W.)	1
Onions—lb. (N.S.W.)	1	Prunes—lb. (N.S.W.)	1
Potatoes—lb. (N.S.W.)	3		

Ration C.

Married Couple, 1 Child.

Bread—loaves	7	Meat—lb.	5
Flour—lb. (N.S.W.)	2	Tea—oz.	8
Sugar—lb. (1A)	4	Jam—oz.	36
Condensed milk—lb.	2	(Brands: R.S.T., D.S.O., Orchard Pride, Melba, Annandale Jam Co.)	
(A.M.P. brand)		Rice—lb. (best N.S.W.)	1
Golden syrup—lb.	2	Soap—bar (N.S.W.)	1
Butter—lb.	1½	Potatoes—lb. (N.S.W.)	4
(N.S.W. choicest)		Onions—lb. (N.S.W.)	2
Milk—pints	3½	Prunes—lb. (N.S.W.)	1
Cheese—lb. (N.S.W.)	1		
Oatmeal—lb. (N.S.W.)	2		

Ration D.

Married Couple and 2 or 3 Children.

Bread—loaves	9	Meat—lb.	8
Flour—lb. (N.S.W.)	3	Tea—oz.	10
Sugar—lb. (1A)	4	Jam—oz.	48
Condensed milk—lb.	3	(Brands: R.S.T., D.S.O., Orchard Pride, Melba, Annandale Jam Co.)	
(A.M.P. brand)		Rice—lb. (best N.S.W.)	1
Golden syrup—lb.	2	Soap—bar (N.S.W.)	1
Butter—lb.	1½	Potatoes—lb. (N.S.W.)	7
(N.S.W. choicest)		Onions—lb. (N.S.W.)	2
Milk—pints	7	Prunes—lb. (N.S.W.)	1
Cheese—lb. (N.S.W.)	1		
Oatmeal—lb. (N.S.W.)	2		

Ration E.

Married Couple and 4 or 5 Children.

Bread—loaves	10	Meat—lb.	9
Flour—lb. (N.S.W.)	4	Tea—oz.	16
Sugar—lb. (1A)	5	Jam—oz.	48
Condensed milk—lb.	3	(Brands: R.S.T., D.S.O., Orchard Pride, Melba, Annandale Jam Co.)	
(A.M.P. brand)		Rice—lb. (best N.S.W.)	2
Golden syrup—lb.	2	Soap—bar (N.S.W.)	1
Butter—lb.	2½	Potatoes—lb. (N.S.W.)	7
(N.S.W. choicest)		Onions—lb. (N.S.W.)	2
Milk—pints	7	Prunes—lb. (N.S.W.)	1
Cheese—lb. (N.S.W.)	1		
Oatmeal—lb. (N.S.W.)	4		

Ration F.

Married Couple and 6 or 7 Children.

Bread—loaves	13	Meat—lb.	9
Flour—lb. (N.S.W.)	4	Tea—oz.	16
Sugar—lb. (1A)	7	Jam—oz.	60
Condensed milk—lb.	4	(Brands: R.S.T., D.S.O., Orchard Pride, Melba, Annandale Jam Co.)	
(A.M.P. brand)		Rice—lb. (best N.S.W.)	2
Golden syrup—lb.	2	Soap—bar (N.S.W.)	1
Butter—lb.	2½	Potatoes—lb. (N.S.W.)	7
(N.S.W. choicest)		Onions—lb. (N.S.W.)	2
Milk—pints	10½	Prunes—lb. (N.S.W.)	1
Cheese—lb. (N.S.W.)	1		
Oatmeal—lb. (N.S.W.)	4		

Issue "B" and "F" for family with 8 or 9 children, and "D" and "F" together for family of 10 or 11 children.

Recipients of food relief orders enjoy the privilege of changing items of food within the scale.

In addition to the scale itself the Government have approved of a liberal list of alternative items, that is, that may be taken in substitution—value for value—for articles within the scale proper. The alternative items are as follows:

Powdered milk.	Pumpkin.
Dripping.	Swede turnips.
Honey.	Self-raising flour.
Barley.	Dried peas or lentils.
Cocoa.	Currants.
Coffee.	Sultanas.
Eggs.	Raisins.
Salt.	Vegetable seeds.
Baking powder.	Bacon.
Treacle.	

Obituary.

EDGAR KENNETH RODDA.

WE regret to announce the death of Dr. Edgar Kenneth Rodda, which occurred on December 6, 1932, at Sunbury, Victoria.

THOMAS STORIE DIXON.

WE regret to announce the death of Dr. Thomas Storie Dixon, which occurred at Sydney on December 9, 1932.

Correspondence.

PHYSIOLOGICAL STANDARDS IN AUSTRALIA AND NEW ZEALAND.

SIR: At the recent congress of the Australian and New Zealand Association for the Advancement of Science held in Sydney, a combined meeting of the Sections of Physiology and Medical Science and National Health decided that it was desirable to collect data on Australian and New Zealand physiological standards.

A committee has been formed to collect and arrange suitable data. Information would be welcomed relating to such human variables as: height, weight, blood constituents, cell counts, haemoglobin, chest measurements, vital capacity *et cetera*, basal metabolism results, pelvimetry results.

The above items are to be taken as merely indicative and not a complete list of the material required.

Such data should be accompanied by any information likely to be of value in estimating any possible deviation from the normal range; for example, a history of endocrine disorder in a person whose height and weight have been supplied.

The investigation is not limited to any age period, nor is it intended that only Australian and New Zealand born should be included, though birth places should be given wherever possible.

The committee would also be grateful to receive any information as to the existence of data, published or unpublished, of which it may not be aware.

Information should be forwarded to the secretaries of the committee.

Yours, etc.,

A. H. BALDWIN,
A. J. CANNY,

University of Sydney, Joint Secretaries.
November 4, 1932.

FACIAL PARALYSIS FOLLOWING TICK-BITE.

SIR: The following case is of interest. M.U., aged two, was brought to my surgery on Monday, October 3. She was suffering from a left facial paralysis. She had been perfectly well until the preceding Friday, when she had developed an urticaria persisting for about six hours. Otherwise the child had appeared to be well and had not complained of any pain. On Saturday and Sunday she was well, and on Monday her mother had noticed that her face was twisted.

Examination revealed a bluish mass occupying the lumen of the left external meatus. Owing to the prevalence of ticks I felt justified in dropping ether and then absolute alcohol into the ear. Under anæsthetic the bluish mass was discovered to be a dead tick, with its head adherent to the bony floor of the external meatus. The lower half of the drum was slightly congested. Recovery was aided by a course of massage and was complete within three weeks.

Yours, etc.,

FRANCIS C. CROSSLÉ.

Bulli, New South Wales,
November 19, 1932.

Books Received.

WHAT IS SEX? AN OUTLINE FOR YOUNG PEOPLE, by H. Wright, M.B., B.S., with an introduction by G. C. Turner, M.A.; 1932. London: Noel Douglas. Crown 8vo., pp. 172, with illustrations. Price: 5s. net.

Medical Appointments.

Dr. S. J. Cantor (B.M.A.) has been appointed Acting Medical Superintendent of the Hospital for the Insane at Sunbury, Victoria.

Dr. F. R. Kerr (B.M.A.) has been appointed to act as Medical Inspector of Shipping for the Purposes of the Navigation Act, 1912-1926.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser", page xiv.

CHILDREN'S HOSPITAL, CARLTON, VICTORIA: Medical Officers.
COLLINSVILLE DISTRICT HOSPITAL, COLLINSVILLE, NORTH QUEENSLAND: Medical Officer.

HOMOEOPATHIC HOSPITAL, ST. KILDA, MELBOURNE, VICTORIA: Medical Officers.

LAUNCESTON PUBLIC HOSPITAL, LAUNCESTON, TASMANIA: Resident Medical Officer (male).

ROYAL NORTH SHORE HOSPITAL OF SYDNEY, NEW SOUTH WALES: Junior Resident Medical Officers.

THE BRISBANE AND SOUTH COAST HOSPITALS BOARD, QUEENSLAND: Resident Medical Officer.

THE PUBLIC SERVICE BOARD, SYDNEY, NEW SOUTH WALES: Assistant Medical Officer of Health (male).

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phoenix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, R.M.A. Building, Adelaide Street, Brisbane.	Brisbane Associated Friendly Societies' Medical Institute. Mount Isa Mines. Toowoomba Associated Friendly Societies' Medical Institute. Chillagoe Hospital. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL are advised, in their own interests, to submit a copy of their agreement to the Council before signing.
SOUTH AUSTRALIAN: Secretary, 307, North Terrace, Adelaide.	All Lodge Appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 65, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (Wellington Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to "The Editor", THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2.)

SUBSCRIPTION RATES.—Medical students and others not receiving THE MEDICAL JOURNAL OF AUSTRALIA in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rates are £3 for Australia and £2 5s. abroad per annum payable in advance.